PB-219 017

A Process Cost Estimate for Limestone Slurry Scrubbing of Flue Gas

Part 2 detailed estimate sheets

Catalytic, Inc.

prepared for
Environmental Protection Agency

JANUARY 1973

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PB 219 017

Environmental Protection Technology Series

A Process Cost Estimate for Limestone Slurry Scrubbing of Flue Gas

Part II - Detailed Estimate Sheets

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EPA-R2-73-148b

A Process Cost Estimate for Limestone Slurry Scrubbing of Flue Gas
Part II - Detailed Estimate Sheets

by

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Contract No. 68-02-0241
Task No. 11
Program Element No. 1A2013

Project Officer: J. S. McSorley

Control Systems Laboratory
National Environmental Research Center
Research Triangle Park, North Carolina 27711

Prepared for

OFFICE OF RESEARCH AND MONITORING
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D. C. 20460

January 1973

BIBLIOGRAPHIC DATA SHEET	1. Report No. EPA-R2-73-148b	2.	PB 219 017
4. Title and Subtitle A Process Cost Estimate for Limestone Slurry Scrubbing of Flue Gas, Part II -- Detailed Estimate Sheets			5. Report Date January 1973
			6.
7. Author(s) E.L. Calvin			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Catalytic, Inc. 1515 Mockingbird Lane Charlotte, North Carolina 28209			10. Project/Task/Work Unit No. Task No. 11
			11. Contract/Grant No. 68-02-0241
12. Sponsoring Organization Name and Address EPA, Office of Research and Monitoring NERC/RTP, Control Systems Laboratory Research Triangle Park, North Carolina 27711			13. Type of Report & Period Covered Final
			14.
15. Supplementary Notes			

16. Abstracts

Part II of the report contains detailed estimate sheets resulting from a conceptual design and cost estimate for a wet limestone scrubbing system for removal of sulfur dioxide from the flue gas of a new 500-megawatt steam boiler plant, fired with coal containing a 3.5 percent sulfur. The estimate covers all equipment from the boiler breeching to the stack, and includes: limestone storage and processing, slurry scrubbing with stack gas reheater and accessories, and spent limestone slurry pond disposal and water recovery. The capital cost for the scrubbing system installed with a new boiler plant was estimated to be $20.15 million, or an incremental cost of $40.30 per kilowatt of installed power. The operating cost was estimated to be $7.20 million per year, or 2.06 mills per kilowatt hour of electricity generated.

17. Key Words and Document Analysis. 17a. Descriptors

Air Pollution
*Desulfurization
Flue Gases
Washing
*Cost Estimates
Capital Costs
Operating Costs
Design
Limestone
Slurries
Sulfur Dioxide
Coal
Equipment

17b. Identifiers/Open-Ended Terms

Air Pollution Control
Stationary Sources
*Wet Limestone Scrubbing

17c. COSATI Field/Group 13B

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Unlimited	UNCLASSIFIED	
	20. Security Class (This Page) UNCLASSIFIED	22. Price

FORM NTIS-35 (REV. 3-72)

USCOMM-DC 14952-P72

SUMMARY

A conceptual design and cost estimate have been prepared for a wet limestone scrubbing system to operate in conjunction with the 500 mw steam boiler plant fired with coal that has a concentration of 3.5 per cent sulfur. The wet limestone process is based upon data developed by TVA, Office of Agricultural and Chemical Development in the Muscle Shoals Pilot Plant. The design and cost estimate is for installation with a new boiler plant; however, the installation for "retrofit" on an existing boiler plant of similar size would be identical except for the capacity of induced draft fans.

The capital cost for the plant was estimated to be $20.15 million or an incremental cost of $40.30 per kilowatt of installed power. This capital cost estimate is based upon quotations for the majority of the equipment and construction labor estimated at the 1973 level of midwest labor rates. The plant design was performed in sufficient detail to provide take-offs for piping and other mechanical hardware to provide an accurate basis for the price quotations. Detailed estimate sheets are included as Part 2 of the report. Part I of the report gives details of the design and a summary of capital and operating cost.

Operating cost of the wet limestone scrubbing system was estimated to be $7.2 million per year, or 2.06 mills per kilowatt hour of electricity generated. This operating cost was calculated using typical unit prices for raw materials and labor and factors derived from conceptual design. Operating costs will vary in different locations from differences in raw material costs, utility costs, and labor rates.

15018-271P

SUMMARY SHEET

ESTIMATE/JOB. NO. 41,940 (TASK 11-EPA 68-02-0241) DATE AUG. 30, 1972

CUSTOMER ENVIRONMENTAL PROTECTION AGENCY

LOCATION SITE UNDETERMINED

DESCRIPTION [A PROCESS COST ESTIMATE FOR LIMESTONE SLURRY SCRUBBING OF FLUE GAS]

Item	Amount
MATERIAL	6 218 700
SUBCONTRACTS AND SHOP LABOR	5 546 300
ALL RISK INSURANCE, LEGAL LIABILITY, ETC. (.4125 % × TOTAL JOB)	82 000
SPECIAL TAXES, (Sales, Use, etc.) (4. % × NON-PROC. MATL.)	57 000
TOTAL MATERIAL, SUBCONTRACTS & SHOP LABOR	11 904 000
FIELD LABOR	2 575 000
PAYROLL BURDEN 11.9 %	305 000
TOTAL FIELD LABOR	2 880 000
FIELD SUPERVISION, FIELD OFFICE PERSONNEL, FIELD OFFICE EXPENSE, FIELD COST ANALYSIS, START-UP OPERATORS — 15 % × LABOR & BURDEN.	433 000
CONSTRUCTION EQUIPMENT AND TOOLS 12 % × LABOR & BURDEN	347 000
TOTAL OTHER FIELD CHARGES	780 000
MECHANICAL ENGINEERING, PROCESS ENGINEERING, ESTIMATING AND COST ANALYSIS, HOME OFFICE TRAVEL EXPENSE, PURCHASING, EXPEDITING AND SHOP INSPECTION, ACCOUNTING, INDUSTRIAL REL., GEN. ADM. & CONSTRUCTION MANAGEMENT — 12 % × SUB-TOTAL ABOVE	1 880 000
TOTAL HOME OFFICE EXPENSES	1 880 000
SUB-TOTAL	17 444 000
OVERHEAD / FEE 5 %	872 000
TOTAL CHARGES	18 316 000
CONTINGENCIES / ESCALATION 10 %	1 834 000
GRAND TOTAL	20 150 000

REMARKS

MATERIAL SHEET

ESTIMATE NO. 41940 (TASK II-EPA 68-02-0241) DATE AUG. 30, 1972 PAGE ____ OF ____

CUSTOMER ENVIRONMENTAL PROTECTION AGENCY LOCATION SITE UNDETERMINED

CODE	DESCRIPTION	SIZE		MATERIAL	LABOR	SUBCONTRACT
	= JOB SUMMARY =					
	GROUP I LIMESTONE HANDLING UNIT:			74 890	66 550	76 000
	GROUP II SLURRY PREP. UNIT:			667 340	145 570	46 300
	GROUP III SCRUBBING SYSTEM:			2 455 410	990 460	1 600 000
	GROUP IV FLUE GAS DISCH. UNIT:			1 592 360	395 590	—.—
	GROUP V REHEAT SYSTEM:			216 380	72 650	101 500
	GROUP VI AMMONIA UNIT:			19 770	16 730	—.—
	GROUP VII WASTE DISPOSAL:			412 270	453 870	3 694 000
	GROUP VIII ENTRAINMENT SEPAR. RECIRC:			122 850	80 310	28 500
	GROUP IX MAJOR ELECT. EQUIP.			301 000	29 200	—.—
	SUB-TOTAL - GROUPS I-THRU-IX			5 862 270	2 250 930	5 546 300
	MISC. DIRECT CHARGES: (4.% & 10.% × LABOR)			88 730	221 070	—.—
	CONSTR. SUPPLIES & PETTY TOOLS: (6.% × LABOR)			133 000	—.—	—.—
	TESTING WELDERS: (.4% & 1.4% × PIPING LABOR)			2 700	10 000	—.—
	TEMPORARY CONSTR. FACILITIES: (6.% & 4.% × LABOR)			132 000	93 000	—.—
	TOTAL MATERIAL, LABOR AND SUBCONTRACT			6 218 700	2 575 000	5 546 300

021-271

= ALL AREAS — GROUPS I THRU IX =

S U B - S U M M A R Y

CUSTOMER ENVIRONMENTAL PROTECTION AGENCY — ESTIMATE NO. 41,940

LOCATION SITE UNDETERMINED — DATE AUG. 30, 1972

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS	156,000	13,200	—.—
0200	~~STACKS~~ BREECHING	930,000	100,000	—.—
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS	17650	1580	—.—
0900	PUMPS AND DRIVERS	207760	42370	—.—
1000	BLOWERS AND COMPRESSORS	344500	26640	—.—
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.	77900	17500	—.—
1200	MISCELLANEOUS MECHANICAL EQUIPMENT	623200	58400	—.—
2500	TANKAGE	100000	10000	579300
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS	84300	2,350	—.—
3000	SCRUBBERS & ENTRAINMENT SEPARATORS	384000	73,500	1240000
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	2,925,310	345,540	1,819,300
1300	PIPING	1,573,200	721,700	—.—
1400	SEWERS — CONCRETE TRENCHES	—.—	—.—	—.—
1500	INSTRUMENTATION	326,000	116,100	—.—
1600	ELECTRICAL	533,600	309,300	—.—
1700	CONCRETE — 2300 CY	72,940	314,040	—.—
1800	STRUCTURAL STEEL — 570 TONS	348,360	208,710	—.—
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT	—.—	—.—	3,727,000
2200	INSULATION	50,750	101,600	—.—
2300	PAINTING & PROTECTIVE COATINGS	23,230	93,680	—.—
2400	FIELD TESTING	4,480	39,660	—.—
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION	4,400	600	—.—
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	S U B - T O T A L	5,862,270	2 250 930	5,546,300
3700	MISCELLANEOUS DIRECT CHARGES (4% & 10% × LABOR)	88730	221070	—.—
3800	STOREHOUSE ACCOUNTS			
00	CONSTRUCTION SUPPLIES & PETTY TOOLS (6% × LABOR)	133,000	—.—	—.—
1300	TESTING WELDERS (.4% & 1.4% × PIPING LABOR)	2,700	10,000	—.—
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES (6%, 4% × LABOR)			
2000	TEMPORARY CONSTRUCTION BUILDINGS	132,000	93,000	—.—
2100	TEMPORARY SITE DEVELOPMENT			
	T O T A L D I R E C T C O S T S	6218,700	2,575,000	5,546,300

021-271

→ GROUP I LIMESTONE HANDLING UNIT ←

SUB-SUMMARY

CUSTOMER ENVIRONMENTAL PROTECTION AGENCY ESTIMATE NO. 41790 (Job No. 11)

LOCATION DURHAM, NORTH CAROLINA DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS			
0900	PUMPS AND DRIVERS (1)	550	320	
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP. (2)	56,500	15,000	
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE (1)			76,000
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	57,050	15,320	76,000
1300	PIPING	200	600	
1400	SEWERS			
1500	INSTRUMENTATION			
1600	ELECTRICAL	8,500	8,100	
1700	CONCRETE 233 CY	8,400	39,200	
1800	STRUCTURAL STEEL	30	40	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION	—•—	—•—	
2300	PAINTING & PROTECTIVE COATINGS	700	3,260	
2400	FIELD TESTING	10	30	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	74,890	66,550	76,000
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
[illegible]00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
[illegible]300	TESTING WELDERS			
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 4 1 9 4 0   CODE → 7 8: 0 9   AREA → 9 10: 0 1   DATE CC75-80

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
	P-112	0 9 0 1	TUNNEL SUMP PUMP	

FIXED	LINE DESCRIPTION 17-22		WRITE IN 23-33	FIXED TYPE UNIT	QUANTITY 38-45	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP		A *	I-R CENTR		1 REQ	550			320
NO. OF PIECES		A A							
HORSEPOWER		A B							
GPM		A C	5 GPM						
HEAD - FT.		A D	10' TDH						
MOTOR HORSEPOWER		B *							
TURBINE HORSEPOWER		C *							
		D *							
		E *							
FREIGHT		F *				F/A			
		G *							
VENDOR SERVICE		H *							
		J *							
		K *							
FOUNDATION	1 7 0 3	A *							
CONCRETE DEMOLITION	1 7 [illegible]	A *							
		B *							
STRUCTURAL STEEL	1 8 0 1	A *							
STL PLATFMS - LADDERS	1 [illegible] 3	A *							
		B *							
INSULATION	2 2 0 1	A *							
PAINT	2 [illegible] 1	A *				10	-		30
PILING	[illegible] 7 0 1	A *							
TOTAL						560		— • —	350

4 CODE 0900 DESCRIPTION PUMPS AND DRIVERS SHEET 1 OF 1

0900 GROUP I

ESTIMATE DETAIL SHEET

CC1

DATE CC75-80

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 11 AREA → 9 10: 01

SEQUENTIAL PIECE# → CC11-16: D-101

ITEM DESCRIPTION: 17-22: 1101 ## 23-45: LIMESTONE SILO CONVEYOR 46-74

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
TOTAL CONVEYOR	A *	REX	UNR					
WIDTH OF BELT	A A	24-IN						
LENGTH OF CONVEYOR	B *	260-LF	UNR					
SPEED	B A	220-FPM						
CAPACITY	C *	200-TON / HR	UNR		55,500		-.-	15,000
MOTOR HORSE POWER	C A	50-HP						
		65,000-LB WT						
SUB TOTAL - 1101	9 9							
FOUNDATIONS	1708 A *	TUNNEL (1718)	CY	80-CY	3200		-.-	19500
FTGS & PIERS	1710 A *	FTGS & PIERS	CY	26-CY	900		-.-	5900
SMALL SUPERSTRUCTURES	1712 A *		CY					
SUPPORT SUPERSTRUCTURES	1801 A *	INCL W EQUIP	LB		-.-		-.-	-.-
PLATFORMS & LADDERS	1803 A *	INCL W EQUIP	LB		-.-		-.-	-.-
FIREPROOFING: TYPE, THK	1901 A *		SF					
FIREPROOFING: TYPE, THK	1901 B *		CF					
INSULATION - ALLOW	2201 A *		SF		300		-.-	1,700
PAINTING - ALLOW	2301 A *		TON					
PAINTING - ALLOW	2301 B *		SF					
SHIPPED FROM MILWAUKEE, WISCONSIN					F/A			
VENDOR SUPERVISION					1,000		-.-	-.-
		(INCL FEEDER D-100)						
TOTAL								

CODE: 1100 DESIGNATION: ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP. SHEET 1 OF 2

1100 GROUP I

ESTIMATE DETAIL SHEET

CG1

ESTIMATE/JOB NO. → CC2-6: 41940   CODE → 7 8: 11   AREA → 9 10: 01   DATE CC75-80:

SEQUENTIAL PIECE # → CC11-16: D-100   ITEM DESCRIPTION 17-22: 1101 # #   23-46: STOCKPILE FEEDER   46-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 60-74
TOTAL FEEDER	A *	4FT LG VIBRATING	UNR	1 EACH	PRICE			
SPEED	A A	900 RPM			INCLU-			
CAPACITY	B *	100 TPH TO 200	UNR		DED		-.-	-.-
	B A				WITH			
HOPPER	C *	6'X6'X5 DEEP	UNR	1 EACH	D-101			
	C A							
		REX						
SUB TOTAL - 1101	9 9							
FOUNDATIONS	1708 A *	w/ D-101	CY					
FTGS & PIERS	1710 A *		CY					
SMALL SUPERSTRUCTURES	1712 A *		CY					
SUPPORT SUPERSTRUCTURES	1801 A *		LB					
PLATFORMS & LADDERS	1803 A *		LB		-.-		-.-	-.-
FIREPROOFING: TYPE, THK	1901 A *		SF					
FIREPROOFING: TYPE, THK	1901 B *		CF					
INSULATION - ALLOW	2201 A *		SF					
PAINTING - ALLOW	2301 A *		TON					
PAINTING - ALLOW	2301 B *		SF					
SHIPPED WITH D-101								
TOTAL					60900		-.-	42100

CODE: 1100   DESIGNATION: ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.   SHEET 2 OF 2

1100 GROUP I

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 25 (7 8) AREA → 01 (9 10) DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# → V-103 (CC11-16) | 17-22: 2501## | 23-45: LIMESTONE STG SILO | 46-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
CAPACITY	A*	770-TON RECO	MG					
WEIGHT	B*		LB	84000				
DESIGN: OF, PSIG	BA				—0—		76000	—0—
SHELL: DIAMETER	BB	20-FT						
LENGTH T TO T	BC	48-FT						
THICKNESS	BD	.25" SHELL						
PL SPEC	BE	C-STL						
HEADS: NO., TYPE	BF	2 CONES						
THICKNESS	BG	TOP .25" BTM 3/8"						
SUB TOTAL - 2501	99							
SLABS & PEDESTALS	1705A*		CY	124	4200		—0—	13400
SADDLES FOR HORIZ. TKS.	1715A*		CY					
CONC. TANK RINGS	1736A*		CY					
SUPPT. SUPERSTRUCTURES	1801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK	2201A*	NONE	SF		—0—		—0—	—0—
COVER	2201AA							
PAINTING-STRUCT. STL.	2301A*		TON					
PAINTING-TANK	2301B*		SF	5500	220			1100
TOTAL					4480		76000	14500

CODE: 2500 DESIGNATION: TANKAGE SHEET 1 OF 1

2500 GROUP I

8

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940

CODE → 7 8: 13

AREA → 9 10: 01

DATE CC75-80

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		1301##		

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL	A *		TON	.5-TN	100			
ALLOY	B *		TON					
OTHER MATLS.	C *		TON					
	D *		TON					
	E *		TON					
	F *		TON					
	G *		TON					
VALVES: CARBON STL.	1302 A *		NO		50			
ALLOY	B *		NO					
OTHER MATLS.	C *		NO					
	D *		NO					
	E *		NO					
	F *		NO					
	G *		NO					
FLGS, FTGS: CARBON STEEL	1303 A *		UNR		50			
ALLOY	B *		UNR					
OTHER MATLS.	C *		UNR					
	D *		UNR					
	E *		UNR					
	F *		UNR					
	G *		UNR					
SPECIALTIES-TRAPS, ETC.	H *		UNR					
SPRING HANGERS	I *		UNR					
EXPANSION JOINTS	J *		NO					
SHOP FAB'N. - VDR. CARB. STL	1304 A *		TON					
ALLOY	B *		TON					
ERECT. UNDERGROUND PIPE	1305 A *		TON					
M/H TON	B *							
ERECT. RACK PIPE: CARB. STL	1306 A *		TON					
M.H TON	B *		MH					
ERECT. RACK PIPE: ALLOY	C *		TON					
M.H./TON	D *		MH					
TOTAL								

CODE: 1300 DESIGNATION: PIPING

SHEET 1 OF 2

1300 GROUP I

CC1

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 13   AREA → (9 10) 01   DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# → CC11-18 | 17-22: 1307## | 23-45 | 46-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
ERECT. ALL OTHER: CARB. STL	A*	55-MH	TON		—·—		—·—	600
MH/TON	B*		MH					
ERECT ALL OTHER: ALLOY	C*		TON					
MH/TON	D*		MH					
FLD. SHOP FAB: CARB. STL	E*		TON					
MH/TON	F*		MH					
FLD SHOP FAB: ALLOY	G*		TON					
MH/TON	H*		MH					
TESTING WELDERS	1308A*		%PL					
PIPING SKETCHES	1309A*		EA					
TEMP. PIPING	1310A*		%DL					
PIPE CASTINGS	1339A*		LF					
EXCAV. FOR UGRD. PIPING	1340A*		CY					
COAT & WRAP UNDGRD. PIPING	1341A*		LF					
SUB TOTAL - 1300	99							
CONC. P.S. 100% FLD. FAB. INC. FDN.	1713A*		CY					
PIPE WAY TRENCHES	1718A*		CY					
PRECAST P.S. - FAB'N. ONLY	1731A*		CY					
PRECAST P.S. - ERECT. ONLY	1732A*		NO					
PIPE SUPPT. RIGRID HGRS.	1805A*		LB					
MINOR P.S. - PREFAB	1805B*	200#/TON	LB	50	30			40
SMALL SHAPES - FLD. FAB.	1805C*		LB					
PIPE RACKS - PREFAB	1807A*		LB					
FIREPROOF. STR. STL. P.S.	1901A*		CF					
PIPING INSULATION	2201A*		LF		—·—		—·—	—·—
PAINTING STR. STL. SUPPTS.	2301A*		TON					
PAINTING PIPE	2302*		TON	.5	10			30
TESTING	2401A*		%PL		10			30
TOTAL					250			700

CODE 1300   DESIGNATION: PIPING   SHEET 2 OF 2

1300 GROUP I

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 1 6 AREA → (9 10) 0 1

DATE (CC75-80)

SEQUENTIAL PIECE# → CC11-18 | ITEM DESCRIPTION 17-22: 1 6 0 1 # # | 23-45 | 46-74

FIXED →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS	A *		HP		2000			400
POWER WIRING	1602 A *		UNR		1900			3600
LIGHTING SYSTEM	B *		UNR		4000			3400
GROUNDING SYSTEM	C *		UNR		600			700
TELEPHONE & COMMUN. SYS	D *		UNR		—.—			—.—
ELECTRIC TRACING	E *		UNR		—.—			—.—
SUBSTATIONS	1605 A *		KVA		—.—			—.—
	B *		KVA					
	C *		KVA					
INSTRUMENT WIRING	1607 A *		UNR		—.—			—.—
GENL. ELECTRICAL MATL.	1608 A *		UNR					
ELEC. SUBCONTRACTS	1609 A *		UNR					
	B *		UNR					
TEMP. P & L MATLS. CCCO.	1610 A *		UNR					
POWER BILLS	B *		UNR					
TEMP. P & L SUBCONT.	C *		UNR					
SUB TOTAL - 1600	99							
MISC. ELECT. SUPPT. FTGS.	1710 A *		CY		100		—.—	400
DUCT ENCASEMENTS	1720 A *		CY					
ELECT. MANHOLES	1729 A *		CY					
STRUCT. STL. FOR SUPPTS.	1801 A *		LB					
PAINTING - STRUCT. STL.	2301 A *		TON	}				
PAINTING - [illegible]P.	2301 B *		TON	}	100		—.—	400
PAINTING - CONDUIT	2301 C *		TON	}				
TOTAL					8700			8900

CODE: 1600 DESIGNATION: ELECTRICAL SHEET OF

1600 GROUP I

021-271

→ GROUP II - SLURRY PREP. UNIT ←

SUB-SUMMARY

CUSTOMER ENVIRONMENTAL PROTECTION AGENCY   ESTIMATE NO. 41741 (TASK No. 11)

LOCATION DURHAM, NORTH CAROLINA   DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS (1)	1,500	150	
0900	PUMPS AND DRIVERS (4)	5,100	2,660	
1000	BLOWERS AND COMPRESSORS (1)	12,500	640	
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP. (3)	21,400	2,500	
1200	MISCELLANEOUS MECHANICAL EQUIPMENT (3)	550,000	50,000	
2500	TANKAGE (1)			46,300
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS (1)	26,900	500	
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	617,400	56,450	46,300
1300	PIPING	15,500	14,200	
1400	SEWERS			
1500	INSTRUMENTATION	6,000	2,000	
1600	ELECTRICAL	16,800	22,900	
1700	CONCRETE 224 CY	7,590	44,260	
1800	STRUCTURAL STEEL 4 TON	3,270	2,240	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION	-•-	-•-	
2300	PAINTING & PROTECTIVE COATINGS	700	2,780	
2400	FIELD TESTING	80	740	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	667,340	145,570	46,300
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
300	TESTING WELDERS			
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940   CODE → 7-8: 08   AREA → 9-10: 02   DATE CC75-80:

SEQUENTIAL PIECE# → CC11-16: V-104   ITEM DESCRIPTION: 17-22: 0001##   23-48: TUBE MILL SURGE TANK   49-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 48	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	GATX / REQ	LB	800				
DESIGN OF PSIG	AA	80°F ATM			1500		—•—	150
SHELL: DIAMETER	AC	4-FT						
LENGTH T TO T	AD	4-FT						
THICKNESS	AE							
HEADS: NO., TYPE	AF	OPEN TOP						
THICKNESS	AG	FLAT BOTT.						
PL. SPEC.	AH	CS W/ EPOXY COAT						
MOUNTING	AI	VERT.						
SUPPORTS	AJ							
WEIGHT	B*		LB					
DWG. NO.	CA							
INQ. NO.	CB							
VENDOR	CC							
FREIGHT	D*	INCL.	CWT					
INTERNALS	E*		CF					
INTERNALS	F*		CF					
INTERNALS	G*		LB					
INTERNALS	H*		LB					
SUB TOTAL - 0001	99							
SLABS-PEDESTALS	1705A*		CY	2.5	90		—•—	280
SADDLES	1715A*		CY					
SUPPT. SUPERSTRUCTURES	1801A*		LB					
PLATFORMS/LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE THK	2201A*	NONE	SF		—•—		—•—	—•—
COVER	2201AA							
PAINTING: STRUCT. STL.	2301A*	SANDBL. & EPOXY CT	~~SQ~~	60 SF	30		—•—	120
PAINTING: VESSEL	2301B*		SF	60 SF	10		—•—	30
TOTAL					1630		—•—	580

CODE: 0800   DESIGNATION: VESSELS, TANKS & DRUMS   SHEET 1 OF 1

0800 GROUP II

13

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 09 AREA → 9 10: 02 DATE CC75-80

SEQUENTIAL PIECE# → CC11-16: P102AB | 17-22: 0001## | ITEM DESCRIPTION 23-48: LIMESTONE SLRY TR PUMPS | 49-74

FIXED	LINE DESCRIPTION 17-22		WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-46	MATERIAL 54-60	S 40	SUBCONTRACT 54-60	LABOR 68-74
TOTAL PUMP		A *	3x3x12 ASH		2 REQ.				
NO. OF PIECES		A A	2@ 1100#		2200#	2200		-0-	1060
HORSEPOWER		A B							
GPM		A C	130 GPM						
HEAD - FT.		A D	100' TDH						
			RUBBER INTERNL						
MOTOR HORSEPOWER		B *	25 HP						
TURBINE HORSEPOWER		C *							
		D *							
		E *							
FREIGHT		F *	F/A						
		G *							
VENDOR SERVICE		H *							
		J *							
		K *							
FOUNDATION	1708	A *		CY	2.5	50		-·-	370
CONCRETE DEMOLITION	1735	A *							
		B *							
STRUCTURAL STEEL	1801	A *							
STL PLATFMS - LADDERS	1803	A *							
		B *							
INSULATION	2201	A *							
PAINT	2301	A *				20		-·-	80
PILING	2701	A *							
TOTAL									

CODE: 0900 DESIGNATION: PUMPS AND DRIVERS SHEET 1 OF 2

0900 . GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 09 AREA → (9 10) 02 DATE (CC75-80)

SEQUENTIAL PIECE# → (CC11-16) P103AB (17-22) 0901## ITEM DESCRIPTION (23-45): LIMESTONE SLRY FD PUMPS (46-74)

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP	A*	6x6x14 ASH		2 REQ				
NO. OF PIECES	AA	2@ 1700#		3400#	2900		—•—	1600
HORSEPOWER	AB							
GPM	AC	350 GPM						
HEAD - FT.	AD	50' TDH						
		RUBBER INTERNALS						
MOTOR HORSEPOWER	B*	20 HP						
TURBINE HORSEPOWER	C*							
	D*							
	E*							
FREIGHT	F*	F/A						
	G*							
VENDOR SERVICE	H*							
	J*							
	K*							
FOUNDATION	1708A*		CY	4	120		—•—	590
CONCRETE DEMOLITION	1725A*							
	B*							
STRUCTURAL STEEL	1801A*							
STL PLATFMS - LADDERS	1[illegible]03A*							
	B*							
INSULATION	2201[illegible]*							
PAINT	2301A*				30		—•—	120
PILING	2[illegible]0[illegible]A*							
TOTAL					5350		—•—	3820

COST CODE 0900 DESIGNATION: PUMPS AND DRIVERS SHEET 2 2

0900 GROUP II

ESTIMATE DETAIL SHEET

CC1	ESTIMATE/JOB NO. (CC2-6)	CODE (7 8)	AREA (9 10)	DATE (CC75-80)
	41940	10	02	

SEQUENTIAL PIECE# (CC11-16)	17-22	ITEM DESCRIPTION 23-45	46-74
C-102	1001##	TUBE MILL AIR COMPRESSR	

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	IR 1 REG	LB					
TYPE	AA							
#/HR	AB				12500		—0—	640
SCFM	B*	200 CFM @	CFM					
DESIGN SUCT. COND. OF	BA							
PSIG	BB	120 PSIG						
	BC	FRT. INCL.						
DISCHARGE COND.: OF	BD							
PSIG	BE							
	BF							
RECIP. STAGES	BG							
DRIVER	C*		LB					
MOTOR HP	CA							
TURBINE/C BHP	CB							
TURBINE/NC BHP	CC							
GAS ENGINE HP	CD							
GAS ENGINE RPM	CE							
GUARDS FOR CPLG. & MISC.	D*		UNR					
SUB TOTAL - 1001	99							
FOUNDATIONS	1708A*		CY	3	90		—•—	440
INSULATION	2201A*		SF					
PAINTING	2301A*		SF		40		—•—	160
TOTAL					12[illegible]30		—•—	1240

CODE: 1000 DESIGNATION: BLOWERS & COMPRESSORS

SHEET 1 OF 1

1000 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 11   AREA → (9 10) 02   DATE (CC75-80)

SEQUENTIAL PIECE# → (CC11-16) D102AC (17-22) 1101 ## ITEM DESCRIPTION (23-46): LIMESTONE WEIGH FEEDERS (46-74)

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-46	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 60-74
TOTAL FEEDER	A *	14' LG. 1 HP	UNR	3 REQ.				
	A A	INC. BELT FEEDER,						
	B *	MECH. WT. CONTRL	UNR		21400		— 0 —	2500
	B A	WT. TOTALIZER,						
	C *	DRIVE, POSIT'NR	UNR					
CAPACITY	C A	10 TO 22 TPM	EST	4000#				
		@ 90 PCF F/A						
SUB TOTAL - 1101	9 9	MERRICK						
FOUNDATIONS	1708 A *		CY					
FTGS & PIERS	1710 A *		CY					
SMALL SUPERSTRUCTURES	1712 A *		CY	3	100		— 0 —	680
SUPPORT SUPERSTRUCTURES	1801 A *		CY					
PLATFORMS & LADDERS	1803 A *		LB	8000	2550		— 0 —	1280
FIREPROOFING: TYPE, THK	1901 A *		LB					
FIREPROOFING: TYPE, THK	1901 B *		SF					
INSULATION - ALLOW	2201 A *		CF					
PAINTING - ALLOW	2301 A *		SF					
PAINTING - ALLOW	2301 B *	NONE	TON / SF		— 0 —		— 0 —	— 0 —
TOTAL					24050		— 0 —	4460

CODE: 1100   DESIGNATION: ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.   SHEET 1 OF 1

1100 GROUP II

ESTIMATE DETAIL SHEET

CC1

DATE ____ (CC75-80)

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 1 2 AREA → (9 10) 0 2

SEQUENTIAL PIECE# → (CC11-16) F100AC (17-22) 1201## ITEM DESCRIPTION (23-45): TUBE MILL WET GRINDERS (46-74)

LINE DESCRIPTION FIXED → → →	17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	$ 46	SUBCONTRACT 54-60	LABOR 68-74
	A *	BALL MILLS KVS	UNR	3 REQ.				
	A A	9' ID x 22' LG.						
	B *	INC. MILL, 800HP	UNR		548000		— o —	50000
	B A	MOTORS, BALL CHG						
	C *	TOTAL WT. FOR 3	UNR	951,000 #				
SPEED	C A	19.2 RPM						
		VENDOR SUPERV.		ALLOW	2000			
SUB TOTAL - 1201	99	FRT. INCL.						
FOUNDATION	1708A*		CY	75	2300		— • —	11000
FTGS. & PIPERS	1710A*		CY	75	2550		— • —	17000
[redacted]	1712A*	COLUMNS	CY	30	1050		— • —	6800
[redacted]	1724A*	ELEV. SLAB	CY	15	750		— o —	4500
STRUCT. STEEL - OTHER	1801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
JIB CRANE OR DAVIT	1809A*		LB					
SPEC. STLL SUPPTS., ETC.	1809B*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
FIREPROOFING: TYPE, THK	1901B*		CF					
INSULATION	2201A*		SF					
PAINTING	2301A*		TON		200		— • —	800
PAINTING	2301B*		TON					
TOTAL					556850		— • —	90100

CODE: 1200 DESIGNATION: MISC. MECH. EQUIPMENT SHEET 1 OF 1

1200 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940   CODE (7 8) → 25   AREA (9 10) → 02   DATE   CC75-80

SEQUENTIAL PIECE# (CC11-16) → V-105

ITEM DESCRIPTION: 17-22: 2501 ## | 23-48: LIMESTONE SLRY HOLD TK | 49-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
CAPACITY	A *	RECO	MG					
WEIGHT	B *	EST. WT	LB	36000#	—0—		46300	—0—
DESIGN: OF, PSIG	B A							
SHELL: DIAMETER	B B	30-FT						
LENGTH T TO T	B C	30-FT						
THICKNESS	B D	1ST RING .25", 3/16						
PL SPEC	B E	CS						
HEADS: NO., TYPE	B F	OPEN-TOP FLAT-BT						
THICKNESS	B G	BTM 1/4"						
		RUBBER-LINED			INCL. ABOVE			
SUB TOTAL - 2501	9 9							
SLABS & PEDESTALS	1705 A *		CY					
SADDLES FOR HORIZ. TKS.	1715 A *		CY					
CONC. TANK RINGS	1736 A *		CY	11	360		—0—	2200
SUPPT. SUPERSTRUCTURES	1801 A *		LB					
PLATFORMS & LADDERS	1803 A *		LB					
FIREPROOFING: TYPE, THK	1901 A *		SF					
INSULATION: TYPE, THK	2201 A *	NONE	SF		—0—		—0—	—0—
COVER	2201 A A							
PAINTING-STRUCT. STL.	2301 A *		TON					
PAINTING-TANK	2301 B *		SF	3000	150			600
TOTAL					510		46300	2800

CODE: 2500   DESIGNATION: TANKAGE   SHEET 1 OF 1

2500 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 29 AREA → (9 10) 02 DATE (CC75-80)

SEQUENTIAL PIECE# (CC11-16)	ITEM DESCRIPTION 17-22	ITEM DESCRIPTION 23-45	46-74
A-102	2901##	LIMESTONE SLRY TK AGITR	

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	30' ⌀ 30' DEEP	LB	26300 #	26900			
HORSEPOWER	B*	100 HP DENVER	HP					500
		RUBBER COATED						
SUB TOTAL - 2901	99	F/A						
FTGS. & PIERS	1710A*							
INSULATION	2201A*		CY					
PAINTING	2301A*		SF					
					20✓		— • —	70
TOTAL					26920			570

CODE: 2900 DESIGNATION: AGITATORS & MIXERS

SHEET 1 OF 1

2900 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940   CODE (7 8) → 13   AREA (9 10) → 02   DATE (CC75-80)

SEQUENTIAL PIECE # → CC11-16 | ITEM DESCRIPTION: 17-22: 1301## | 23-45 | 46-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL	A*		TON	9.5 TW	1,100			
ALLOY	B*		TON					
OTHER MATLS.	C*	NEOPRENE LINED	TON	2 TW	6,000			
	D*		TON					
	E*		TON					
	F*		TON					
	G*		TON					
VALVES: CARBON STL.	1302 A*		NO		1,300			
ALLOY	B*		NO					
OTHER MATLS.	C*		NO		2,000			
	D*		NO					
	E*		NO					
	F*		NO					
	G*		NO					
FLGS, FTGS: CARBON STEEL	1303 A*		UNR		500			
ALLOY	B*		UNR					
OTHER MATLS.	C*		UNR		2,000			
	D*		UNR					
	E*		UNR					
	F*		UNR					
	G*		UNR					
SPECIALTIES-TRAPS, ETC.	H*		UNR					
SPRING HANGERS	I*		UNR					
EXPANSION JOINTS	J*		NO					
SHOP FAB'N. - VDR. CARB. STL	1304 A*		TON					
ALLOY	B*		TON					
ERECT. UNDERGROUND PIPE	1305 A*		TON					
M'H TON	B*							
ERECT. RACK PIPE: CARB. STL	1306 A*		TON					
M.H TON	B*		MH					
ERECT. RACK PIPE: ALLOY	C*		TON					
M.H. TON	D*		MH					
TOTAL								

CODE: 1300   DESIGNATION: PIPING   SHEET   OF

1300 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 13   AREA → (9 10) 02   DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		1307##		

FIXED	17-22		LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
ERECT. ALL OTHER: CARB. STL		A*	750-MH	TON	3.5	—		—	8300
MH/TON		B*		MH					
ERECT ALL OTHER: MATL.		C*	450-MH	TON	2.0	—		—	5000
MH/TON		D*		MH					
FLD. SHOP FAB: CARB. STL		E*		TON					
MH/TON		F*		MH					
FLD SHOP FAB: ALLOY		G*		TON					
MH/TON		H*		MH					
TESTING WELDERS	1309	A*		GPL					
PIPING SKETCHES	1309	A*	RUBBER LINED	EA					
TEMP. PIPING	1310	A*	CHUTES	SDL		2600		—	900
PIPE CASTINGS	1339	A*		LF					
EXCAV. FOR UGRD. PIPING	1340	A*		CY					
COAT & WRAP UNGRD. PIPING	1341	A*		LF					
SUB TOTAL - 1300		99							
CONC. P.S. 100% FLD. FAB.	1713	A*		CY					
INC. FDN.									
PIPE WAY TRENCHES	1718	A*		CY					
PRECAST P.S. - FAB'N. ONLY	1731	A*		CY					
PRECAST P.S. - ERECT. ONLY	1732	A*		NO					
PIPE SUPPT. RIGRID HGRS.	1805	A*		LB					
MINOR P.S. - PREFAB	1805	B*	200#/TON	LB	1200	720			960
SMALL SHAPES - FLD. FAB.	1805	C*		LB					
PIPE RACKS - PREFAB	1807	A*		LB					
FIREPROOF. STR. STL. P.S.	1901	A*		CF					
PIPING INSULATION	2201	A*		LF		—		—	—
PAINTING STR. STL. SUPPTS.	2301	A*		TON					
PAINTING PIPE	2301	B*		TON	5.5	100			400
TESTING	2401	A*		GPL		80			740
TOTAL						16400			16300

CODE: 1300   DESIGNATION: PIPING   SHEET   OF

1300 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41140   CODE → (7 8) 15   AREA → (9 10) 02   DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		1501##	EPA INSTRUMENTATION	

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS	A*		LF					
BD-MTD. INSTR. - ACCESS	B*		NO		3,500			
ANALYSIS INSTR. FLD. MTD.	1503A*		NO					
FLOW INSTR. FLD. MTD.	B*		NO		500			
LEVEL INSTR. FLD. MTD.	C*		NO		1,000			
PRESSURE INSTR. FLD. MTD.	D*		NO		200			
TEMP. INSTR. FLD. MTD.	E*		NO					
WEIGH INSTR. FLD. MTD.	F*		NO					
COMBUSTION CONTROL - PKGD.	G*		NO					
CONTROL VALVES	1511A*		NO	NONE	—·—		—·—	2000
SLIDE CHOPPER PLUS VA	B*		NO					
VALVE POSITIONERS	C*		NO					
BUTTERFLY VALVES	D*		NO					
RELIEF VALVES	E*		NO	NONE	—·—			
I.A. FILTERS, REGS. ACCESS.	1516A*		UNR					
I.A. TUBING & FITTINGS	B*		UNR					
I.A. SUPPLY	C*		UNR					
I.A. CHANNEL & SUPPTS.	D*		UNR		800			
INSTR. PROCESS PIPING	1518A*		UNR					
INSTR. HOUSINGS	B*		UNR					
INSTALL, CALIBRATE, ST-UP	1520A*		%MC					
INSTRUMENTATION SUBCT	1550A*		UNR					
SUB TOTAL - 1500	99							
FTGS. & PIERS	1710A*		CY	NEGL	—·—			—·—
CURBS & LEV. RAIL PANEL	1710B*		CY					
PIPING INSUL. WINTERIZE	2201A*		LF		—·—			—·—
PAINTING - EQUIP.	2301A*		TON	NEGL	—·—			—·—
PAINTING - PIPE	2301B*		TON					
TOTAL					6000			2000

CODE: 1500   DESIGNATION: INSTRUMENTATION   SHEET 1 OF 1

1500 GROUP II

ESTIMATE DETAIL SHEET

CC1

DATE CC75-80

ESTIMATE/JOB NO. → CC2-6: 41940 | CODE → 7 8: 18 | AREA → 9 10: 02

SEQUENTIAL PIECE# →	CC11-18	ITEM DESCRIPTION 17-22	23-45			46-74			
		1601 # #							

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS	A *		HP		4200			1400
POWER WIRING	1602 A *		UNR		7000			16800
LIGHTING SYSTEM	B *		UNR		4800			3500
GROUNDING SYSTEM	C *		UNR		600			700
TELEPHONE & COMMUN. SYS	D *		UNR		-.-			-.-
ELECTRIC TRACING	E *		UNR		-.-			-.-
SUBSTATIONS	1605 A *		KVA		-.-			-.-
	B *		KVA					
	C *		KVA					
INSTRUMENT WIRING	1607 A *		UNR		200			500
GENL. ELECTRICAL MATL.	1608 A *		UNR					
ELEC. SUBCONTRACTS	1609 A *		UNR					
	B *		UNR					
TEMP. P & L MATLS. CCCO.	1610 A *		UNR					
POWER BILLS	B *		UNR					
TEMP. P & L SUBCONT.	C *		UNR					
SUB TOTAL - 1600	99							
MISC. ELECT. SUPPT. FTGS.	1710 A *		CY		100			400
DUCT ENCASEMENTS	1720 A *		CY					
ELECT. MANHOLES	1729 A *		CY					
STRUCT. STL. FOR SUPPTS.	1801 A *		LB					
PAINTING - STRUCT. STL.	2301 A *		TON	}				
PAINTING - EQUIP.	2301 B *		TON	}	100			400
PAINTING - CONDUIT	2301 C *		TON	}				
TOTAL					17000			23700

24

CODE: 1600 DESIGNATION: ELECTRICAL SHEET OF

1600 GROUP II

5021-271

→ GROUP III SCRUBBING SYSTEM ←

S U B - S U M M A R Y

CUSTOMER ENVIRONMENTAL PROTECTION AGENCY ESTIMATE NO. 41940 (TASK 1.D.11)

LOCATION DURHAM, NORTH CAROLINA DATE

PAGE OF

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS			
0900	PUMPS AND DRIVERS (20)	138,600	25,000	
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE (12)	100,000	10,000	360,000
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS (8)	57,400	1,850	
3000	SCRUBBERS & ENTRAINMENT SEPARATORS (12)	384,000	73,500	1,240,000
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	680,000	110,350	1,600,000
1300	PIPING	1,218,700	404100	
1400	SEWERS			
1500	INSTRUMENTATION	211,000	75,000	
1600	ELECTRICAL	115,600	115,800	
1700	CONCRETE 992 CY	30,570	107,900	
1800	STRUCTURAL STEEL 324 TON	184,350	106,100	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION	1,300	2,700	
2300	PAINTING & PROTECTIVE COATINGS	11,390	46,010	
2400	FIELD TESTING	2,500	22,500	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	S U B - T O T A L	2,455,410	990,460	1,600,000
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	T O T A L D I R E C T C O S T S			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 09 (7 8) AREA → 03 (9 10) DATE (CC75-80)

SEQUENTIAL PIECE# → P100AJ (CC11-16) 0901 #5 (17-22) ITEM DESCRIPTION (23-45): VENTURI RECIRC. PUMP (10) (46-74)

FIELD	17-22		LINE DESCRIPTION WRITE IN 23-33	FIXED TYPE UNIT	QUANTITY 33-45	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP		A *	10 x 10 x 18 ASH		10 REQ				
NO. OF PIECES		A A	10 @ 4728 # ea		47,300 #	47600		— 0 —	10000
HORSEPOWER		A B							
GPM		A C	2600 GPM						
HEAD - FT.		A D	90' TDH						
			RUBBER INTERNALS						
MOTOR HORSEPOWER		B *	125 HP						
TURBINE HORSEPOWER		C *							
		D *							
		E *							
FREIGHT		F *	F/A						
		G *							
VENDOR SERVICE		H *							
		J *							
		K *							
FOUNDATION	1709	A *							
CONCRETE DEMOLITION	1735	A *		CY	41	1270		— 0 —	6000
		B *							
STRUCTURAL STEEL	1801	A *							
STL PLATFMS - LADDERS	1803	A *							
		B *							
INSULATION	2201	A *							
PAINT	2301	A *				100		— 0 —	400
PILING	2701	A *							

0900 PUMPS AND DRIVERS SHEET 1 OF 2

0900 GROUP III

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → 41940 CODE → 09 AREA → 03 DATE

ITEM DESCRIPTION

SEQUENTIAL PIECE # → P101AJ | 0901 ## | TCA RECIRC. PUMPS (10)

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-39	FIXED TYPE UNIT	QUANTITY	MATERIAL	$	SUBCONTRACT	LABOR
TOTAL PUMP	A *	12×12×26 ASH		10 REQ				
NO. OF PIECES	A A	10 @ 8570# C2		85,700#	91000		—0—	15000
HORSEPOWER	A B							
GPM	A C	5600 GPM						
HEAD - FT.	A D	85' TDH						
MOTOR HORSEPOWER	B *	200 HP						
TURBINE HORSEPOWER	C *							
	D *							
	E *							
FREIGHT	F *	F/A						
	G *							
VENDOR SERVICE	H *							
	J *							
	K *							
FOUNDATION	1708 A *		CY	70	2200		—0—	10300
CONCRETE DEMOLITION	1735 A *							
	B *							
STRUCTURAL STEEL	1801 A *							
STL PLATFMS - LADDERS	1803 A *							
	B *							
INSULATION	2201 A *							
PAINT	2301 A *				150		— —	600
PILING	2701 A *							
TOTAL					142320		—0—	42300

CLASS 0900 DESIGNATION: PUMPS AND DRIVERS SHEET 2 OF 2

0900 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41140 (CC2-6) CODE → 25 (7 8) AREA → 03 (9 10) DATE (CC75-80)

SEQUENTIAL PIECE# → V100AD (CC11-16) 2501 ## (17-22)

ITEM DESCRIPTION (23-45): VENTURI RECIRCUL. TANKS

FIXED → → →	17-22	LINE DESCRIPTION — WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
CAPACITY	A *	RECO	MG	4 REQ				
WEIGHT	B *	EST. WT 4@ 14000 #	LB	56000	—0—		85000	—0—
DESIGN: OF, PSIG	B A							
SHELL: DIAMETER	B B	20' ϕ						
LENGTH T TO T	B C	15' HI						
THICKNESS	B D	3/16"						
PL SPEC	B E	CS						
HEADS: NO., TYPE	B F	OPEN TOP						
- THICKNESS	B G	1/4" FLT. BOTTOM						
		RUBBER LINED						
SUB TOTAL - 2501	9 9							
SLABS & PEDESTALS	1705 A *		CY	125	4250		—•—	13500
SADDLES FOR HORIZ. TKS.	1715 A *		CY					
CONC. TANK RINGS	1736 A *		CY					
SUPPT. SUPERSTRUCTURES	1801 A *		LB					
PLATFORMS & LADDERS	1803 A *		LB					
FIREPROOFING: TYPE, THK	1901 A *		SF					
INSULATION: TYPE, THK	2201 A *	NONE	SF		—•—		—•—	—•—
COVER	2201 A A							
PAINTING-STRUCT. STL.	2301 A *		TON					
PAINTING-TANK	2301 B *	4 @ 1000 #	SF	4000	200		—•—	800
TOTAL								

CODE: 2500 DESIGNATION: TANKAGE SHEET 1 OF 3

2500 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 25 AREA → (9 10) 03 DATE (CC73-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
	V/01AD	2501##	TCA RECIRC. TANKS	

LINE DESCRIPTION FIXED	17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
CAPACITY	A*	RECD	MG	4 REQ				
WEIGHT	B*	EST WT. A@ 18000 #	LB	72000	—0—		121000	—0—
DESIGN: OF, PSIG	BA							
SHELL: DIAMETER	BB	20'⌀						
LENGTH T TO T	BC	26' HI						
THICKNESS	BD	3/16"						
PL SPEC	BE	CS						
HEADS: NO., TYPE	BF	OPEN TOP						
THICKNESS	BG	BOTTOM 1/4"						
		RUBBER LINED						
SUB TOTAL - 2501	99							
SLABS & PEDESTALS	1705A*		CY	125	4250		—0—	13500
SADDLES FOR HORIZ. TKS.	1715A*		CY					
CONC. TANK RINGS	1736A*		CY					
SUPPT. SUPERSTRUCTURES	1801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK	2201A*	NONE	SF		—0—		—0—	—0—
COVER	2201AA							
PAINTING-STRUCT. STL.	2301A*		TON					
PAINTING-TANK	2301B*	4 @ 1600 #	SF	6400	900		—0—	1300
TOTAL								

CODE: 2500 DESIGNATION: TANKAGE SHEET 2 OF 3

2500 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 25 AREA → 9 10: 03 DATE CC75-80

ITEM DESCRIPTION

SEQUENTIAL PIECE# → CC11-16: V/02AD 17-22: 2501## 23-45: SCRUBBER SUMPS 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 60-74
CAPACITY	A*	JOP	NG	4 REQ				
WEIGHT	B*	30,000# x 4	LB	120000	100000		—0—	10000
DESIGN: OF, PSIG	BA							
SHELL: DIAMETER	BB	19'7" W x 33'9" L						
LENGTH T TO T	BC	17' M1						
THICKNESS	BD							
PL SPEC	BE	COATEN w/ FLAKE			—0—		154000	—0—
HEADS: NO., TYPE	BF	& 2" KAOCRETE						
THICKNESS	BG	LIN. (IN FIELD)						
		FRT. INCL.						
SUB TOTAL - 2501	99							
SLABS & PEDESTALS	1705A*	w/ 1700 ACC'T	CY		—0—		—0—	—0—
SADDLES FOR HORIZ. TKS.	1715A*		CY					
CONC. TANK RINGS	1736A*		CY					
SUPPT. SUPERSTRUCTURES	1801A*	w/ 1800 ACC'T	LB		—0—		—0—	—0—
PLATFORMS & LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK	2201A*		SF					
COVER	2201AA							
PAINTING-STRUCT. STL.	2301A*		TON					
PAINTING-TANK	2301B*		SF		400		—0—	1600
		(TANKS SHIPPED KNOCKED DOWN)						
TOTAL					109400		360000	40700

CODE: 2500 DESIGNATION: TANKAGE SHEET 3 OF 3

2500 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 29   AREA → (9 10) 03   DATE (CC75-80)

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	ITEM DESCRIPTION 23-45	46-74
	A100AD	2901##	VENTURI RECIRCUL. TK. AGT	

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 58-74
WEIGHT	A*	7200-LB EA X4 →	LB	28,800 #	26,400		—·—	850
HORSEPOWER	B*	15 HP DENVER	HP					
		20'6 x 15' TURB.						
SUB TOTAL - 2901	99	RUBBER COATED						
		F/A						
FTGS. & PIERS	1710A*		CY					
INSULATION	2201A*		SF					
PAINTING	2301A*							
					70		—·—	280
TOTAL								

CODE: 2900   DESIGNATION: AGITATORS & MIXERS   SHEET 1 OF 2

2900 GROUP III

31

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 79 (7 8) AREA → 03 (9 10) DATE

SEQUENTIAL PIECE# (CC11-38)	17-22	ITEM DESCRIPTION 23-45	46-74
A/01/AD	2901##	TCA RECIRC. TANK AGITAT.	

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 58-74
WEIGHT	A*	773½ # e2 x 4	LB	31000	31000		—•—	
HORSEPOWER	B*	20 HP DENVER	HP					1000
		20' ⌀ x 26' TURB						
SUB TOTAL - 2901	99	RUBBER COATED						
		F/A						
FTGS. & PIERS	1710A*		CY					
INSULATION	2201A*		SF					
PAINTING	2301A*							
					70		—•—	280
TOTAL					57540		—•—	2410

CODE: 2900 DESIGNATION: AGITATORS & MIXERS

SHEET 2 OF 2

2900 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 30 (7 8) AREA → 03 (9 10) DATE (CC75-80)

SEQUENTIAL PIECE# → L100AD (CC11-16)

ITEM DESCRIPTION: 17-22: 3001 ## — 23-45: VENTURI SCRUBBERS (4) — 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	20,000# x 4 UOP	LB	80,000				
	AA	CS w/PLASTITE &			63000		—•—	6500
	AB	2" KAOCRETE LNG						
		406,000 ACFM @ 300°F } (LINING) →			—•—		190,000	—•—
SUB TOTAL - 3001	99	F/A						
SLAB & PEDESTALS	1705A*	}	CY					
FLOOR SLABS AT GRADE	1707A*	} w/ 1700 ACC'T	CY		—•—		—•—	—•—
HORIZ. MTD. EQUIP.	1708A*	}	CY					
FTGS. & PIERS	1710A*		CY					
SADDLES FOR HORIZ. TKS	1715A*		CY					
SUPPORT SUPERSTRUCTURES	1801A*	} w/ 1800 ACC'T	LB		—•—		—•—	—•—
PLATFORMS & LADDERS	1803A*	}	LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK.	2201A*		SF					
COVER	2201AA							
PAINTING: STRUCT. STL.	2301A*		SF					
PAINTING - EQUIP.	2301B*		SF		50		—•—	200
TOTAL								

CODE: 3000 DESIGNATION: SCRUBBERS & ENTR. SEPARATORS SHEET 1 OF 3

3000 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 | CODE → 7 8: 30 | AREA → 9 10: 03 | DATE CC75-80

SEQUENTIAL PIECE# → CC11-16: L/01/AD | 17-22: 3001 ## | ITEM DESCRIPTION 23-45: TCA SCRUBBERS (4) | 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	50,000# x 4 UOP	LB	200,000				
	AA	2 STAGE, PROV. FOR			200000			36,000
	AB	3RD; 1/4" CORTEN }						
		W/NEOPRENE LINR } LINING →			— - —		640,000	— - —
SUB TOTAL - 3001	99	F/A						
SLAB & PEDESTALS	1705A*	}	CY					
FLOOR SLABS AT GRADE	1707A*	W/1700 ACC'T	CY		—0—		—0—	—0—
HORIZ. MTD. EQUIP.	1708A*		CY					
FTGS. & PIERS	1710A*		CY					
SADDLES FOR HORIZ. TKS	1715A*		CY					
SUPPORT SUPERSTRUCTURES	1801A*	} W/1800 ACC'T	LB		—0—		—0—	—0—
PLATFORMS & LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK.	2201A*		SF					
COVER	2201AA							
PAINTING: STRUCT. STL.	2301A*		SF					
PAINTING - EQUIP.	2301B*		SF	8800	400		— - —	1800
		(INCL. BALL PACKG INTERN PIPING ETC.)						
TOTAL								

CODE: 3000 DESIGNATION: SCRUBBERS & ENTR. SEPARATORS SHEET 2 OF 3

3000 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 30 AREA → 9 10: 03 DATE CC75-80

SEQUENTIAL PIECE# → CC11-16: L102AD | ITEM DESCRIPTION 17-22: 3001## | 23-45: HOR. 2 STG. ENTRAIN. SEP. | 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	35,000 # x 4	LB	140,000				
	AA	CHEVRON DEMISTER			121000		—·—	31000
	AB	CS w/NEOPRENE	}					
		UOP F/A	}LINING →		—·—		410,000	—·—
SUB TOTAL - 3001	99							
SLAB & PEDESTALS	1705A*	}	CY					
FLOOR SLABS AT GRADE	1707A*	} w/1700 ACC'T	CY		—·—		—·—	—·—
HORIZ. MTD. EQUIP.	1708A*	}	CY					
FTGS. & PIERS	1710A*		CY					
SADDLES FOR HORIZ. TKS	1715A*		CY					
SUPPORT SUPERSTRUCTURES	1801A*	} w/1800 ACC'T	LB		—·—		—·—	—·—
PLATFORMS & LADDERS	1803A*	}	LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK.	2201A*		SF					
COVER	2201AA							
PAINTING: STRUCT. STL.	2301A*		SF					
PAINTING - EQUIP.	2301B*		SF	7600	350		—·—	1550
TOTAL					384800		1240000	77050

CODE: 3000 DESIGNATION: SCRUBBERS & ENTR. SEPARATORS SHEET 3 OF 3

3000 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940

CODE → 7 8: 13

AREA → 9 10: 03

DATE CC75-80

SEQUENTIAL PIECE# → CC11-16 | ITEM DESCRIPTION 17-22: 1301## | 23-45 | 46-74

FIXED → → →	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL	A *		TON	92 TN	24,200			
ALLOY	B *		TON	.2 TN	400			
OTHER MATLS.	C *	NEOPRENE LINED	TON	147 TN	452,000			
	D *		TON					
	E *		TON					
	F *		TON					
	G *		TON					
VALVES: CARBUN STL.	1302 A *		NO		10,000			
ALLOY	B *		NO		500			
OTHER MATLS.	C *		NO		132,000			
	D *		NO					
	E *		NO					
	F *		NO					
	G *		NO					
FLGS, FTGS: CARBON STEEL	1303 A *		UNR		62,500			
ALLOY	B *		UNR		100			
OTHER MATLS.	C *		UNR		537,000			
	D *		UNR					
	E *		UNR					
	F *		UNR					
	G *		UNR					
SPECIALTIES-TRAPS, ETC.	H *		UNR					
SPRING HANGERS	I *		UNR					
EXPANSION JOINTS	J *		NO					
SHOP FAB'N. - VDR. CARB. STL	1304 A *		TON					
ALLOY	B *		TON					
ERECT. UNDERGROUND PIPE	1305 A *		TON					
M.H TON	B *							
ERECT. RACK PIPE: CARB. STL	1306 A *		TON					
M.H TON	B *		MH					
ERECT. RACK PIPE: ALLOY	C *		TON					
M.H. TON	D *		MH					
TOTAL								

CODE: 1300 DESIGNATION: PIPING SHEET OF

1300 GROUP III

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 13 AREA → (9 10) 03 DATE (CC75-80)

SEQUENTIAL PIECE# → CC11-18 | ITEM DESCRIPTION 17-22: 1307## | 23-45 | 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 33-45	MATERIAL 54-60	S 48	SUBCONTRACT 54-60	LABOR 68-74
ERECT. ALL OTHER: CARB. STL	A*	15,200-MH	TON	92 TN				167,000
MH/TON	B*		MH					
ERECT ALL OTHER: ALLOY	C*	100-MH	TON	.2 TN				1100
NEOPRENE – MH/TON-LINED	D*	21,500-MH	MH	147 TN				236000
FLD. SHOP FAB: CARB. STL	E*		TON					
MH/TON	F*		MH					
FLD SHOP FAB: ALLOY	G*		TON					
MH/TON	H*		MH					
TESTING WELDERS	1308A*		$PL					
PIPING SKETCHES	1309A*		EA					
TEMP. PIPING	1310A*		$DL					
PIPE CASTINGS	1339A*		LF					
EXCAV. FOR UGRD. PIPING	1340A*		CY					
COAT & WRAP UNDGRD. PIPING	1341A*		LF					
SUB TOTAL - 1300	99							
CONC. P.S. 100% FLD. FAB. INC. FDN.	1713A*		CY					
PIPE WAY TRENCHES	1718A*		CY					
PRECAST P.S. - FAB'N. ONLY	1731A*		CY					
PRECAST P.S. - ERECT. ONLY	1732A*		NO					
PIPE SUPPT. RIGRID HGRS.	1805A*		LB	}				
MINOR P.S. - PREFAB	1805B*	200#/TON	LB	48000	29000	-	—•—	38000
SMALL SHAPES - FLD. FAB.	1805C*		LB					
PIPE RACKS - PREFAB	1807A*		LB					
FIREPROOF. STR STL. P.S.	1901A*		CF					
PIPING INSULATION	2001A*		LF		800	-	—·—	1200
PAINTING STR. STL. SUPPTS.	2301A*		TON					
PAINTING PIPE	2301B*		TON	240	3600		—•—	14400
TESTING	2401A*		$PL		2500	-		22500
TOTAL					1254600			480200

CODE: 1300 DESIGNATION: PIPING SHEET OF

1300 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 15 AREA → 9 10: 03 DATE

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	49-74
		1501 ##	EPA INSTRUMENTATION	

LINE DESCRIPTION FIXED → → →	17-22		WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS		A *		LF		28000			
BD-MTD. INSTR. - ACCESS		B *		NO		59800			
ANALYSIS INSTR. FLD. MTD.	1503	A *		NO		16500			
FLOW INSTR. FLD. MTD.		B *		NO		46800			
LEVEL INSTR. FLD. MTD.		C *		NO					
PRESSURE INSTR. FLD. MTD.		D *		NO		6000			
TEMP. INSTR. FLD. MTD.		E *		NO		1700			
WEIGH INSTR. FLD. MTD.		F *		NO					
COMBUSTION CONTROL - PKGD.		G *		NO					
CONTROL VALVES	1511	A *		NO		21200		—o—	75000
SLIDE CHOPPER PLUS VA		B *		NO					
VALVE POSITIONERS		C *		NO		4000			
BUTTERFLY VALVES		D *		NO					
RELIEF VALVES		E *		NO					
I.A. FILTERS, REGS. ACCESS.	1516	A *		UNR					
I.A. TUBING & FITTINGS		B *		UNR					
I.A. SUPPLY		C *		UNR					
I.A. CHANNEL & SUPPTS.		D *		UNR		27000			
INSTR. PROCESS PIPING	1518	A *		UNR					
INSTR. HOUSINGS		B *		UNR					
INSTALL, CALIBRATE, ST-UP	1520	A *		SMC					
INSTRUMENTATION SUBCT	1550	A *		UNR					
SUB TOTAL - 1500		99							
FTGS. & PIERS	1710	A *		CY	6	200			800
CURBS & LEV. RAIL PANEL	1710	B *		CY					
PIPING INSUL. WINTERIZE	2201	A *		LF		500			1500
PAINTING - EQUIP.	2301	A *		TON					
PAINTING - PIPE	2301	B *		TON		200			800
TOTAL						211900			78100

CODE: 1500 DESIGNATION: INSTRUMENTATION SHEET 1 OF 1

1500 GROUP III

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 16   AREA → (9 10) 03

DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# → CC11-16 | 17-22: 1601## | 23-45 | 46-74

FIXED	17-22			WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS		A	*		HP		44500			8700
POWER WIRING	1602	A	*		UNR		20800			35200
LIGHTING SYSTEM		B	*		UNR		25500			24500
GROUNDING SYSTEM		C	*		UNR		800			1400
TELEPHONE & COMMUN. SYS		D	*		UNR					
ELECTRIC TRACING		E	*		UNR					
SUBSTATIONS	1605	A	*		KVA					
		B	*		KVA					
		C	*		KVA					
INSTRUMENT WIRING	1607	A	*		UNR		24,000			46,000
GENL. ELECTRICAL MATL.	1608	A	*		UNR					
ELEC. SUBCONTRACTS	1609	A	*		UNR					
		B	*		UNR					
TEMP. P & L MATLS. [illegible]	1610	A	*		UNR					
POWER BILLS		B	*		UNR					
TEMP. P & L SUBCONT		C	*		UNR					
SUB TOTAL - 1600		9	9							
MISC. ELECT. SUPPT. FTGS.	1710	A	*		CY		1000			4000
DUCT ENCASEMENTS	1720	A	*		CY					
ELECT. MANHOLES	1729	A	*		CY					
STRUCT. STL. FOR SUPPTS	[illegible]01	A	*		LB					
PAINTING - STRUCT. STL.	2301	A	*		TON		} 1000			4000
PAINTING - EQUIP.	2301	B	*		TON					
PAINTING - CONDUIT	2301	C	*		TON					
TOTAL							117600			123800

CODE: 600   DESIGNATION: ELECTRICAL   SHEET   OF

1600 GROUP III

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 18 AREA → 9 10: 03 DATE CC75-80

CC1

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		1801 ##	SCRUBBING SUPERSTRUCT'E	

FIXED → → →	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-30	LABOR 68-74
SUPPORT SUPERSTRUCTS	A *	ALL IN 1801A	LB					
P & L FOR TWRS. & VESSELS	1803 A *	ACCOUNT	LB					
PIPE SUPPRTS. & RIGID HGRS.	1850 A *	LIGHT STL. <18#	LB	94100	30000		—•—	12000
PIPE RACKS	1807 A *	MED. STL. 18-40#	LB	151000	42000		—•—	19000
STEEL DAVITS	1809 A *	HVY. STL. >40#	LB	287000	63000		—•—	31500
JIB CRANES	B *	HR & TPL.	[redacted]	325 LF	2300		—•—	1000
MONORAIL (INCL. STRUCTL)	C *	GRATING	[redacted]	2800 SF	12500		—•—	2800
ELEVATOR STRUCTURES	D *	LADDER W/CAGE	[redacted]	150 LF	2250		—•—	750
STEEL DEMOLITION	1810 A *	STAIRS 172 LF	LB	9500	3300		—•—	1050
STRUCT. STL. SUBCONT.	1805 A *		LB					
SUB TOTAL - 18	99							
TROLLEYS & HOISTS	1201 A *		NO					
LG. NON-BM. SLABS (FORMED)	1701 A *		CY					
LG. NON-BM. SLABS (N/FORMED)	1702 A *		CY					
LG. BEAMED TYPE SLABS	1703 A *	6" THICK	CY	475 CY	13300		—•—	32800
FTG. & PIERS FOR STR. COLS	1710 A *		CY	120 CY	4100		—•—	27000
MULTILEVEL SUPERSTRUCTS.	1711 A *		CY					
1-LEVEL SUPERSTRUCTS	1712 A *		CY					
FIREPROOF STR. STL.	1901 A *		CF					
PAINTING-STR. STL.	2301 A *		TON	300 TN	4500		—•—	18000
TOTAL					177250		—•—	145900

CODE: 1800 DESIGNATION: STRUCTURAL STEEL SHEET OF

1800. GROUP III

40

15021-271

→ GROUP IV FLUE GAS DISCH. UNIT ←

SUB-SUMMARY

CUSTOMER: ENVIRONMENTAL PROTECTION AGENCY — ESTIMATE NO. 41940 (TASK NO. 11)

LOCATION: DURHAM, NORTH CAROLINA — DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	~~STACKS~~ BREECHING	930,000	100,000	
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS			
0900	PUMPS AND DRIVERS			
1000	BLOWERS AND COMPRESSORS (4)	332,000	26,000	
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT (16)	73,200	8,400	
2500	TANKAGE			
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	1,335,200	134,400	— • —
1300	PIPING MINOR UTIL. PIPING ONLY →	(INCL'D. W/	GROUP III	PIPING)
1400	SEWERS			
1500	INSTRUMENTATION	62,000	22,000	
1600	ELECTRICAL	15,000	15,600	
1700	CONCRETE 381 CY	12,250	66,200	
1800	STRUCTURAL STEEL 200 TON	117,450	49,950	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION	47,200	94,400	
2300	PAINTING & PROTECTIVE COATINGS	3,260	13,040	
2400	FIELD TESTING	— • —	— • —	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	1,592,360	395,590	— • —
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
[illegible]00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
00 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-8: 41940 | CODE → 7 8: 0 2 | AREA → 9 10: 0 4 | DATE | CC75-80

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		0 2 0 1 # #	BREECHING	

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 38-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
STEEL STACKS	A *	STACK	LB					
DIAMETER	A A	(NOT IN SCOPE)			-.-		-.-	-.-
HEIGHT	A B							
LINING FOR STEEL STACK	B *	MAIN RUN BREECHG	SF	615-TW	740,000		-.-	80,000
BRICK STACKS	C *		M					
DIAMETER	C A	BY-PASS BREECHG		160-TW	190,000		-.-	20,000
HEIGHT	C B							
SUB TOTAL - 0201	9 9							
FDN. FOR STACK	1 7 1 0 A *		CY					
FIREWALL W/FOOTING	1 7 2 1 A *		CY					
FIREWALL WO/FOOTING	1 7 2 2 A *		CY					
PAINTING	2 3 0 1 A *		SF					
		SUPT STRUCTURE (SEE 1800-SECT)		-.-	-.-		-.-	-.-
		ALL BREECHING CORTEN STEEL						
		NO PAINTING REQD			-.-		-.-	-.-
		INSUL-PERS PROT						
		(MAIN RUN		48,000#	32000		-.-	64000
		(BY-PASS		18,000#	12000		-.-	24000
TOTAL					974000		-.-	188000

CODE: 0200 DESIGNATION: STACKS-SELF SUPPORTING SHEET 1 OF 1

0200 GROUP IV

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 10 AREA (9 10) → 04 DATE (CC75-80)

SEQUENTIAL PIECE# (CC11-16) → C/01/AD

ITEM DESCRIPTION: 17-22: 1001 # # 23-45: BOILER I.D. FANS (4) 46-74

FIXED	17-22			LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT		A	*	EST. 60000 x 4	LB	240000				
TYPE		A	A	MECH. DRAFT WC			332000		—0—	26000
#/HR		A	B	BUFF.						
SCFM		B	*	360,000 CFM	CFM					
DESIGN SUCT. COND. OF		B	A	-37" SP						
PSIG		B	B							
		B	C							
DISCHARGE COND.: OF		B	D							
PSIG		B	E							
		B	F							
RECIP. STAGES		B	G							
DRIVER		C	*		LB					
MOTOR HP		C	A	9000 HP; 1200 RPM			INCL. ABOVE			
TURBINE/C BHP		C	B							
TURBINE/NC BHP		C	C							
GAS ENGINE HP		C	D							
GAS ENGINE RPM		C	E							
GUARDS FOR CPLG. & MISC.		D	*		UHR					
SUB TOTAL - 1001		9	9							
FOUNDATIONS	1708	A	*		CY	250	7750		—0—	36900
INSULATION	2201	A	*	4 @ 800 ea PP	SF	3200	3200		—0—	6400
PAINTING	2301	A	*	NONE	SF		—0—		—0—	—0—
TOTAL							342950		—0—	69200

CODE: 1000 DESIGNATION: BLOWERS & COMPRESSORS SHEET 1 OF 1

1000 GROUP IV

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 12 AREA → (9 10) 04 DATE (CC75-80)

SEQUENTIAL PIECE# → (CC11-16) G10DAD

ITEM DESCRIPTION: (17-22) 1201## (23-45) VENTURI DAMPERS (4)

46-74

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 60-74
	A*	PARALLEL-BLADE →	UNR	4 REQ				
	AA	MULTI-LOUVRE			18500			2100
	B*	10.5' x 10.5'	UNR					
	BA	37" WG						
	C*	W/ ACTUATORS	UNR					
	CA	HERMET; F/A						
SUB TOTAL - 1201	99							
FOUNDATION	1708A*		CY					
FTGS. & PIPERS	1710A*		CY					
SMALL SUPERSTRUCTURES	1712A*		CY					
OUTSIDE PAVING	1724A*		CY					
STRUCT. STEEL - OTHER	1801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
JIB CRANE OR DAVIT	1809A*		LB					
SPEC. STLL SUPPTS., ETC.	1809B*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
FIREPROOFING: TYPE, THK	1901B*		CF					
INSULATION	2201A*		SF					
PAINTING	2301A*		TON					
PAINTING	2301B*		TON		40		-0-	160
TOTAL								

CODE: 1200 DESIGNATION: MISC. MECH. EQUIPMENT SHEET 1 OF 4

1200 GROUP IV

ESTIMATE DETAIL SHEET

CC1

DATE

CC75-80

ESTIMATE/JOB NO. → CC2-6: 41940   CODE → 7 8: 12   AREA → 9 10: 04

SEQUENTIAL PIECE# →	CC11-16: G101AD	17-22: 1201##	ITEM DESCRIPTION 23-45: BY-PASS DAMPERS (4)	46-74

FIXED	LINE DESCRIPTION 17-22		WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
		A*	GUILLOTINE TYPE	UNR	4 REQ				
		AA	10.5' x 10.5'			17700			2100
		B*	37" WG	UNR					
		BA	W/ ACTUATOR						
		C*	HERMET; F/A	UNR					
		CA							
SUB TOTAL - 1201		99							
FOUNDATION	1708	A*		CY					
FTGS. & PIPERS	1710	A*		CY					
SMALL SUPERSTRUCTURES	1712	A*		CY					
OUTSIDE PAVING	1724	A*		CY					
STRUCT. STEEL - OTHER	1801	A*		LB					
PLATFORMS & LADDERS	1803	A*		LB					
JIB CRANE OR DAVIT	1809	A*		LB					
SPEC. STLL SUPPTS., ETC.	1809	B*		LB					
FIREPROOFING: TYPE, THK	1901	A*		SF					
FIREPROOFING: TYPE, THK	1901	B*		CF					
INSULATION	2201	A*		SF					
PAINTING	2301	A*		TON					
PAINTING	2301	B*		TON		40		— • —	160
TOTAL									

CODE: 1200   DESIGNATION: MISC. MECH. EQUIPMENT   SHEET 2 OF 4

1200 GROUP IV

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 12 AREA → (9 10) 04 DATE (CC75-80)

SEQUENTIAL PIECE# → (CC11-16) G102AD

ITEM DESCRIPTION: (17-22) 1201## (23-45) FAN DAMPERS (4)

46-74

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	$ 46	SUBCONTRACT 54-60	LABOR 68-74
	A*	OPPOSED BLADE →	UNR	4 REQ				
	AA	MULTI-LOUVRE			18500			2100
	B*	W/ACTUATOR	UNR					
	BA	10' x 10'						
	C*	37" WG	UNR					
	CA	HERMET; F/A						
SUB TOTAL - 1201	99							
FOUNDATION	1708A*		CY					
FTGS. & PIPERS	1710A*		CY					
SMALL SUPERSTRUCTURES	1712A*		CY					
OUTSIDE PAVING	1724A*		CY					
STRUCT. STEEL - OTHER	!801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
JIB CRANE OR DAVIT	1809A*		LB					
SPEC. STLL SUPPTS., ETC.	1809B*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
FIREPROOFING: TYPE, THK	1901B*		CF					
INSULATION	2201A*		SF					
PAINTING	2301A*		TON					
PAINTING	2301B*		TON		40		— • —	160
TOTAL								

CODE: 1200 DESIGNATION: MISC. MECH EQUIPMENT SHEET 3 OF 4

1200 GROUP IV

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 12 AREA (9 10) → 04 DATE (CC75-80)

SEQUENTIAL PIECE# (CC11-16) → G108AD ITEM DESCRIPTION: 17-22: 1201## 23-45: BY-PASS SECOND'Y DAMPER 46-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
	A *	PARALLEL BLADE,	UNR	4 REQ				
	A A	MULTI-LOUVRE			18500			2100
	B *	10' x 10'	UNR					
	B A	37" WG						
	C *	W/ ACTUATOR	UNR					
	C A	HERMET; F/A						
SUB TOTAL - 1201	9 9							
FOUNDATION	1708 A *		CY					
FTGS. & PIPERS	1710 A *		CY					
SMALL SUPERSTRUCTURES	1712 A *		CY					
OUTSIDE PAVING	1724 A *		CY					
STRUCT. STEEL - OTHER	1801 A *		LB					
PLATFORMS & LADDERS	1803 A *		LB					
JIB CRANE OR DAVIT	1809 A *		LB					
SPEC. STLL SUPPTS., ETC.	1809 B *		LB					
FIREPROOFING: TYPE, THK	1901 A *		SF					
FIREPROOFING: TYPE, THK	1901 B *		CF					
INSULATION	2201 A *		SF					
PAINTING	2301 A *		TON					
PAINTING	2301 B *		TON		40		—•—	160
TOTAL					73960		—•—	9040

CODE: 1200 DESIGNATION: MISC. MECH. EQUIPMENT SHEET 4 OF 4

1200 GROUP IV

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 15 AREA → 9 10: 04 DATE CC75-80:

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		1501##	EPA INSTRUMENTATION	

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 36-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS	A*		LF					
BD-MTD. INSTR. - ACCESS	B*		NO		6000			
ANALYSIS INSTR. FLD. MTD.	1503A*		NO		3500			
FLOW INSTR. FLD. MTD.	B*		NO					
LEVEL INSTR. FLD. MTD.	C*		NO					
PRESSURE INSTR. FLD. MTD.	D*		NO		3600			
TEMP. INSTR. FLD. MTD.	E*		NO					
WEIGH INSTR. FLD. MTD.	F*		NO					
COMBUSTION CONTROL - PKGD.	G*		NO					
CONTROL VALVES	1511A*		NO	NONE			—0—	22000
SLIDE CHOPPER PLUS VA	B*		NO					
VALVE POSITIONERS	C*		NO		40200			
BUTTERFLY VALVES	D*		NO					
RELIEF VALVES	E*		NO					
I.A. FILTERS, REGS. ACCESS.	1516A*		UNR					
I.A. TUBING & FITTINGS	B*		UNR					
I.A. SUPPLY	C*		UNR					
I.A. CHANNEL & SUPPTS.	D*		UNR		8700			
INSTR. PROCESS PIPING	1518A*		UNR					
INSTR. HOUSINGS	B*		UNR					
INSTALL, CALIBRATE, ST-UP	1520A*		%MC					
INSTRUMENTATION SUBCT	1550A*		UNR					
SUB TOTAL - 1500	99							
FTGS. & PIERS	1710A*		CY	NEGL.	—0—		—0—	—0—
CURBS & LEV. RAIL PANEL	1710B*		CY					
PIPING INSUL. WINTERIZE	2201A*		LF	NEGL.	—0—		—0—	—0—
PAINTING - EQUIP.	2301A*		TON					
PAINTING - PIPE	2301B*		TON	NEGL.	—0—		—0—	—0—
TOTAL					62000			22000

CODE: 1500 DESIGNATION: INSTRUMENTATION SHEET 1 OF 1

1500 GROUP IV

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 16 (7 8) AREA → 04 (9 10) DATE

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-18	17-22	23-45	46-74
		1601##		

LINE DESCRIPTION FIXED →	17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 58-74
MOTOR CONTROLS	A*		HP		—			—
POWER WIRING	1602A*		UNR		13,800			14,200
LIGHTING SYSTEM	B*		UNR		800			700
GROUNDING SYSTEM	C*		UNR		200			200
TELEPHONE & COMMUN. SYS	D*		UNR		—			—
ELECTRIC TRACING	E*		UNR		—			—
SUBSTATIONS	1605A*		KVA		—			—
	B*		KVA					
	C*		KVA					
INSTRUMENT WIRING	1607A*		UNR		200			500
GENL. ELECTRICAL MATL.	1608A*		UNR					
ELEC. SUBCONTRACTS	1609A*		UNR					
	B*		UNR					
TEMP. P & L MATLS. CCCO.	1610A*		UNR					
POWER BILLS	B*		UNR					
TEMP. P & L SUBCONT.	C*		UNR					
SUB TOTAL - 1600	99							
MISC. ELECT. SUPPT. FTGS.	1710A*		CY		100			400
DUCT ENCASEMENTS	1720A*		CY					
ELECT. MANHOLES	1729A*		CY					
STRUCT. STL. FOR SUPPTS.	1801A*		LB					
PAINTING - STRUCT. STL.	2[illegible]01A*		TON	}				
PAINTING - EQUIP.	2301B*		TON	}	100			400
PAINTING - CONDUIT	2301C*		TON	}				
TOTAL					15200			16400

CODE: 1600 DESIGNATION: ELECTRICAL SHEET

49

1600 GROUP IV

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 18 AREA → (9 10) 04 DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# → CC11-16 | 17-22: 1801 ## | 23-45: SUPERSTRUCTURE | 46-74

LINE DESCRIPTION

FIXED	17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
SUPPORT SUPERSTRUCTS	A *	ALL IN 1801A	LB					
P & L FOR TWRS. & VESSELS	1803 A *	ACCOUNT	LB					
PIPE SUPPRTS. & RIGID HGRS.	1850 A *	LIGHT STL. <18#	LB	32700	20000			8000
PIPE RACKS	1807 A *	MED. STL. 18-40#	LB	76600	22200			10000
STEEL DAVITS	1809 A *	HVY. STL. >40#	LB	211400	46500			23250
JIB CRANES	B *	HR & TPL.	[illegible]	325 LF	2300			1000
MONORAIL (INCL. STRUCTL)	C *	GRATING	[illegible]	2800 SF	12500			2500
ELEVATOR STRUCTURES	D *	LADDER W/ CAGE	[illegible]	150 LF	2250			750
STEEL DEMOLITION	1810 A *	STAIRS 172 LF	LB	9500	3300			1050
STRUCT. STL. SUBCONT.	1805 A *		LB					
PIPE RACK	1807 A	FOR BREECHING	LB	28000	8400			3100
SUB TOTAL - 18	99							
TROLLEYS & HOISTS	1201 A *		NO					
LG. NON-BM. SLABS (FORMED)	1701 A *		CY					
LG. NON-BM. SLABS (N/FORMED)	1702 A *		CY					
LG. BEAMED TYPE SLABS	1703 A *		CY					
FTG. & PIERS FOR STR. COLS	1710 A *		CY	128 CY	4400			27000
MULTILEVEL SUPERSTRUCTS.	1711 A *		CY					
1-LEVEL SUPERSTRUCTS	1712 A *		CY					
FIREPROOF STR. STL.	1901 A *		CF					
PAINTING-STR. STL.	2301 A *		TON	200	3000		--0--	12000
TOTAL					124850			90950

CODE: 1800 DESIGNATION: STRUCTURAL STEEL SHEET OF

1800 GROUP IV

50

021-271

→ GROUP V - REHEAT SYSTEM ←

SUB-SUMMARY

CUSTOMER: ENVIRONMENTAL PROTECTION AGENCY — ESTIMATE NO. [illegible] ([illegible] No. 11)

LOCATION: DURHAM, NORTH CAROLINA — DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS (4)	156,000	13,200	
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS			
0900	PUMPS AND DRIVERS (5)	770	370	
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE (1)			68,500
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	156,770	13,570	68,500
1300	PIPING	5,500	16,200	
1400	SEWERS			
1500	INSTRUMENTATION	36,000	13,000	
1600	ELECTRICAL	8,800	15,200	
1700	CONCRETE 45 CY	1,400	7,640	
1800	STRUCTURAL STEEL	2,280	1,340	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			33,000
2200	INSULATION	—•—	—•—	
2300	PAINTING & PROTECTIVE COATINGS	1,070	4,280	
2400	FIELD TESTING	160	820	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION	4,400	600	
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	216,380	72,650	101,500
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
3900	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 01 AREA (9 10) → 05 DATE (CC75-80)

SEQUENTIAL PIECE # (CC11-16) → B100AD

ITEM DESCRIPTION: 17-22: 0101## | 23-48: DIR. FIRED COMB. GAS RHTR | 49-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MM BTU/HR	A *	13 MM 02 ZINK	BTU					
CHARGE MATERIAL	A A	4 REHEATERS		4 REQ				
B/HR OR LBS/HR.	A B	EACH INCL.						
SPECIFIC GRAVITY	A C	2 FUEL OIL BURNR						
INLET: DEG F, PSIG	A D	2 COMB. AIR BLOWR			156000			13200
OUTLET: DEG F, PSIG	A E	CONTROL, CABINET						
EFFICIENCY	A F	FUEL OIL PMP SET						
DWG. NO	A G	95-98% EFF.						
FREIGHT	B O							
PACKAGE UNIT	C *	25,000# x 4	LB	100000				
STRUCTURAL STEEL	E *		LB					
BRICKWORK	F *	F/A	M					
BURNERS	G *		EA					
NORMAL NO. BURNERS: OIL	G A							
NORMAL NO. BURNERS: GAS	G B							
TUBES & HEADERS-RADIANT	H *		UHR					
TUBES: NO.	I *		TON					
DIAMETER	I A							
LENGTH	I B							
WALL THICKNESS	I C							
SPEC	I D							
SQ.FT. SURFACE	I E							
PASSES	I F							
HEADERS: TYPE	J *		LB					
SPEC	J A	SUPPORT W/BREECH						
NO.	J B	-ING SUPPORTS.						
TUBE HANGERS	K *		LB					
BREECHING & AIR DUCTS	L *		UHR					
BLOWER/FAN: HP MOTOR	M *		LB					
BLOWER/FAN: BHP TURB.	N *		LB					
LINING OR INSULATION	O *	PAINTING	SF	ALLOW	400			1600
TOTAL					156400		— —	14800

CODE: 0100 DESIGNATION: FIRED HEATERS AND BOILERS SHEET 1 OF 1

0100 GROUP V

52

ESTIMATE DETAIL SHEET

DATE

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 09 (7 8) AREA → 05 (9 10)

ITEM DESCRIPTION

SEQUENTIAL PIECE# → P105AD (CC11-16) | 0901 (17-22) | FUEL OIL PUMPING SETS (23-45) | 46-74

FIXED	17-22		LINE DESCRIPTION WRITE IN 23-33	FIXED TYPE UNIT	QUANTITY 33-45	MATERIAL	?	SUBCONTRACT	LABOR
TOTAL PUMP		A*	4 SETS; EA INCL		4 REG				
NO. OF PIECES		AA	2 DELAV. PUMPS,						
HORSEPOWER		AB	VALVES, MOTORS,						
GPM		AC	ETC						
HEAD - FT.		AG	SKID MOUNTED						
			$ INCL. W/ B100AD			— 0 —		— 0 —	— 0 —
MOTOR HORSEPOWER		B*							
TURBINE HORSEPOWER		C*							
		D*							
		E*							
FREIGHT		F*							
		G*							
VENDOR SERVICE		H*							
		J*							
		K*							
FOUNDATION	1708	A*		CY	4	120		— 0 —	590
CONCRETE DEMOLITION	1735	A*							
		B*							
STRUCTURAL STEEL	1801	A*							
STL PLATFMS - LADDERS	1803	A*							
		B*							
INSULATION	2201	A*							
PAINT	2301	A*	W/ B100 AD			— 0 —		— — —	— — —
PILING	2701	A*							

SHEET 1 OF 2

0900 GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 09 AREA → (9 10) 06 DATE (CC75-80)

SEQUENTIAL PIECE# → (CC11-16) P116 (17-22) 0901## ITEM DESCRIPTION (23-45): FUEL OIL UNLOADING PUMP (46-74)

FIXED	17-22			LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-43	MATERIAL 44-53	S 55	SUBCONTRACT 54-63	LABOR 64-73
TOTAL PUMP		A	*	2×1.5×9 II-R		1 REQ				
NO. OF PIECES		A	A	EST. WT		750#	770		—o—	370
HORSEPOWER		A	B							
GPM		A	C	325 GPM						
HEAD - FT.		A	D	100' TDH						
				CI, BRONZE INTRL						
MOTOR HORSEPOWER		B	*	30 HP						
TURBINE HORSEPOWER		C	*							
		D	*							
		E	*							
FREIGHT		F	*	F/A						
		G	*							
VENDOR SERVICE		H	*							
		J	*							
		K	*							
FOUNDATION	1708	A	*		CY	1	30		—o—	150
CONCRETE DEMOLITION	1735	A	*							
		B	*							
STRUCTURAL STEEL	1601	A	*							
STL PLATFMS - LADDERS	1603	A	*							
		B	*							
INSULATION	2201	A	*							
PAINT	2301	A	*				10		—o—	40
PILING	1701	A	*							
							930		—o—	1150

PUMPS AND DRIVERS

2 2

0900 GROUP V

54

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 25 AREA → (9 10) 05

DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
	V108	2501##	FUEL OIL STORAGE TANK	

LINE DESCRIPTION FIXED → → →	17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
CAPACITY	A*	RECO	MG					
WEIGHT	B*	EST	LB	140000	—0—		68500	—0—
DESIGN: OF, PSIG	BA							
SHELL: DIAMETER	BB	50' Ø						
LENGTH-T TO T	BC	50' HI						
THICKNESS	BD	5/16"; 9/32"; 1/4"						
PL SPEC	BE	CS						
HEADS: NO., TYPE	BF	3/16" CONE ROOF						
THICKNESS	BG	1/4" FLAT BTTM.						
SUB TOTAL - 2501	99							
SLABS & PEDESTALS	1705A*		CY					
SADDLES FOR HORIZ. TKS.	1715A*		CY					
CONC. TANK RINGS	1736A*		CY	23	750		—0—	4600
SUPPT. SUPERSTRUCTURES	1801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK	2201A*	NONE	SF		—0—		—0—	—0—
COVER	2201AA							
PAINTING-STRUCT. STL.	2301A*		TON					
PAINTING-TANK	2301B*		SF	10000	500		—0—	2000
TOTAL					1250		68500	6600

CODE: 2500 DESIGNATION: TANKAGE SHEET 1 OF 1

2500 GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 13   AREA → (9 10) 05   DATE (CC75-80)

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		1301##		

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL	A*		TON	4 TN	2700			
ALLOY	B*		TON					
OTHER MATLS.	C*		TON					
	D*		TON					
	E*		TON					
	F*		TON					
	G*		TON					
VALVES: CARBON STL.	1302 A*		NO		2300			
ALLOY	B*		NO					
OTHER MATLS.	C*		NO					
	D*		NO					
	E*		NO					
	F*		NO					
	G*		NO					
FLGS, FTGS: CARBON STEEL	1303 A*		UNR		50K			
ALLOY	B*		UNR					
OTHER MATLS.	C*		UNR					
	D*		UNR					
	E*		UNR					
	F*		UNR					
	G*		UNR					
SPECIALTIES-TRAPS, ETC.	H*		UNR					
SPRING HANGERS	I*		UNR					
EXPANSION JOINTS	J*		NO					
SHOP FAB'N. - VDR. CARB. STL	1304 A*		TON					
ALLOY	B*		TON					
ERECT. UNDERGROUND PIPE	1305 A*		TON					
M'H TON	B*							
ERECT. RACK PIPE: CARB. STL	1306 A*		TON					
M.H TON	B*		MH					
ERECT. RACK PIPE: ALLOY	C*		TON					
M.H. TON	D*		MH					
TOTAL								

CODE: 1300   DESIGNATION: PIPING   SHEET   OF

300 GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 13 AREA → (9 10) 05 DATE (CC75-80)

SEQUENTIAL PIECE# (CC11-16)	ITEM DESCRIPTION 17-22		23-45			46-74			
	1307##								
FIXED	**LINE DESCRIPTION** 17-22		**WRITE IN** 23-38	**FIXED TYPE UNIT**	**QUANTITY** 39-45	**MATERIAL** 54-60	**S** 46	**SUBCONTRACT** 54-60	**LABOR** 68-74
ERECT. ALL OTHER: CARB. STL		A*	1470-MH	TON	4 TN				16200
MH/TON		B*		MH					
ERECT ALL OTHER: ALLOY		C*		TON					
MH/TON		D*		MH					
FLD. SHOP FAB: CARB. STL		E*		TON					
MH/TON		F*		MH					
FLD SHOP FAB: ALLOY		G*		TON					
MH/TON		H*		MH					
TESTING WELDERS	1308	A*		LPL					
PIPING SKETCHES	1309	A*		EA					
TEMP. PIPING	1310	A*		SOL					
PIPE CASTINGS	1339	A*		LF					
EXCAV. FOR UGRD. PIPING	1340	A*		CY					
COAT & WRAP UNDGRD. PIPING	1341	A*		LF					
SUB TOTAL - 1300		99							
CONC. P.S. 100% FLD. FAB. INC. FDN.	171[illegible]	A*	FOR PIPE RACK	CY	5.5	200			1260
PIPE WAY TRENCHES	1716	A*		CY					
PRECAST P.S. - FAB'N. ONLY	1731	A*	SLEEPERS	CY	8	200			640
PRECAST P.S. - ERECT. ONLY	1732	A*		NC					
PIPE SUPPT. RIGRID HGRS.	1805	A*		LB	}				
MINOR P.S. - PREFAB	1805	B*	200 #/TON	LB	} 800 #	480			640
SMALL SHAPES - FLD. FAB.	1805	C*		LB	}				
PIPE RACKS - PREFAB	1807	A*		LB	6000	1800			700
FIREPROOF. STR. STL. P.S.	1901	A*		SF					
PIPING INSULATION	2[illegible]	A*		LF					
PAINTING STR. STL. SUPPTS.	230[illegible]	A*		TON					
PAINTING PIPE	2301	B*		TON	4	60			240
TESTING	2401	A*		LPL		160			920
TOTAL						8400			20500

CODE: 1300 DESIGNATION: PIPING SHEET OF

1300 GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 15 AREA → 9 10: 05 DATE CC75-80

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		1501##	EPA INSTRUMENTATION	

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS	A*		LF					
BD-MTD. INSTR. - ACCESS	B*		NO					
ANALYSIS INSTR. FLD. MTD.	1503 A*		NO		12200			
FLOW INSTR. FLD. MTD.	B*		NO		16400			
LEVEL INSTR. FLD. MTD.	C*		NO		500			
PRESSURE INSTR. FLD. MTD.	D*		NO					
TEMP. INSTR. FLD. MTD.	E*		NO					
WEIGH INSTR. FLD. MTD.	F*		NO		1800			
COMBUSTION CONTROL - PKGD.	G*		NO					
CONTROL VALVES	1511 A*		NO	NONE				
SLIDE CHOPPER PLUS VA	B*		NO					
VALVE POSITIONERS	C*		NO				-0-	13000
BUTTERFLY VALVES	D*		NO					
RELIEF VALVES	E*		NO					
I.A. FILTERS, REGS. ACCESS.	1516 A*		UNR					
I.A. TUBING & FITTINGS	B*		UNR					
I.A. SUPPLY	C*		UNR					
I.A. CHANNEL & SUPPTS.	D*		UNR					
INSTR. PROCESS PIPING	1518 A*		UNR		5100			
INSTR. HOUSINGS	B*		UNR					
INSTALL, CALIBRATE, ST-UP	1520 A*		?MC					
INSTRUMENTATION SUBCT	1550 A*		UNR					
SUB TOTAL - 1500	99							13000
FTGS. & PIERS	1710 A*		CY	NEGL.	-0-		-0-	-0-
CURBS & LEV. RAIL PANEL	1710 B*		CY					
PIPING INSUL. WINTERIZE	2201 A*		LF	NEGL.	-0-		-0-	-0-
PAINTING - EQUIP.	2301 A*		TON					
PAINTING - PIPE	2301 B*		TON	NEGL.	-0-		-0-	-0-
TOTAL					36000			13000

CODE: 1500 DESIGNATION: INSTRUMENTATION SHEET 1 OF 1

1500 GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 16 AREA (9 10) → 05 DATE (CC75-80)

SEQUENTIAL PIECE# → CC11-16 | ITEM DESCRIPTION 17-22: 1601## | 23-45 | 46-74

FIXED → → →	LINE DESCRIPTION 17-22			WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS		A	*		HP		3300			1200
POWER WIRING	1602	A	*		UNR		5500			11,800
LIGHTING SYSTEM		B	*		UNR		1500			1,200
GROUNDING SYSTEM		C	*		UNR		300			400
TELEPHONE & COMMUN. SYS		D	*		UNR		—·—			—·—
ELECTRIC TRACING		E	*		UNR		—·—			—·—
SUBSTATIONS	1605	A	*		KVA		—·—			—·—
		B	*		KVA					
		C	*		KVA					
INSTRUMENT WIRING	1607	A	*		UNR		200			600
GENL. ELECTRICAL MATL.	1608	A	*		UNR					
ELEC. SUBCONTRACTS	1609	A	*		UNR					
		B	*		UNR					
TEMP. P & L MATLS. CCCO.	1610	A	*		UNR					
POWER BILLS		B	*		UNR					
TEMP. P & L SUBCONT.		C	*		UNR					
SUB TOTAL - 1600		9	9							
MISC. ELECT. SUPPT. FTGS.	1710	A	*		CY		100			400
DUCT ENCASEMENTS	1720	A	*		CY					
ELECT. MANHOLES	1729	A	*		CY					
STRUCT. STL. FOR SUPPTS.	1801	A	*		LB					
PAINTING - STRUCT. STL.	2301	A	*		TON	}				
PAINTING - EQUIP.	2301	B	*		TON	}	100			400
PAINTING - CONDUIT	2301	C	*		TON	}				
TOTAL							9000			16000

CODE: 1600 DESIGNATION: ELECTRICAL SHEET OF

1600 GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 21 AREA (9 10) → 05 DATE (CC75-80)

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		2101##	F-O STG TANK DIKE	

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
ROUGH GRADING	A*		SY					
FINISH GRADING	2102A*	EARTH DIKE	SY					
BLACK TOP RDS. & PAVING	2103A*	10-FT 9-IN HIGH	SY	5400-CY	—.—		32,000	—.—
GRAVEL, SURFACING	2104A*		SY					
RAILROADS	2105A*		LF					
FENCING	2106A*	FINE GRADING I/S	LF					
EARTH DIKES	2107A*	DIKED AREA	CY		—.—		1,000	—.—
DIGGING TEST HOLES	2108A*		UNR					
DEEP WELLS	2109A*		UNR					
TEMP. RR. ROADS, FENCES	2110A*		UNR					
	B*		UNR					
	C*		UNR					
	D*		UNR					
SITE WORK (DEMOLITION)	2111A*		UNR					
SITE WORK SUBCONTRACT	2150A*		UNR					
SUB TOTAL - 21	99							
CONCRETE VALVE BOXES	1717A*		CY					
FIREWALL W/FOOTING	1721A*		CY					
FIREWALL W/O FOOTING	1722A*		CY					
LARGE WATER SEPARATORS	1723A*		CY					
OUTSIDE PAVING	1724A*		CY					
	1724B*		CY					
RETAINING WALLS	1725A*		CY					
SIDEWALKS	1730A*		CY					
TOTAL							33000	

CODE: 2100 DESIGNATION: SITE DEVELOPMENT SHEET OF

2100. GROUP V

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 33 (7 8) AREA → 05 (9 10) DATE (CC75-80)

SEQUENTIAL PIECE # → (CC11-16) | 17-22: 3301## | ITEM DESCRIPTION 23-45: FIRE PROTECTION | 46-74

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
FIRE PROT. SYSTEMS	A *		LF					
	A A	DRY CHEMICAL						
	B *	WHEEL EXTINGRS	UNR	4	3600		—.—	200
	B A							
	C *		UNR					
	C A	4X5-FT HOUSES		4	800		—.—	400
	D *		UNR					
	D A							
	E *		UNR					
	E A							
EXCAV. FOR FIRE LINES	3302 A *		CY					
	A A							
	B *		CY					
	B A							
DEMOLITION-FIRE LINES	3303 A *		UNR					
	A A							
TOTAL					4400		—.—	600

CODE: 3300 DESIGNATION: FIRE PROTECTION SHEET OF

3300 GROUP V

5021-271

GROUP VI AMMONIA UNIT

SUB-SUMMARY

CUSTOMER: ENVIRONMENTAL PROTECTION AGENCY ESTIMATE NO. 21940 (TASK NO. 11)

LOCATION: DURHAM, NORTH CAROLINA DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS (1)	10,000	750	
0900	PUMPS AND DRIVERS			
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE			
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	10,000	750	— • —
1300	PIPING	1,400	5,100	
1400	SEWERS			
1500	INSTRUMENTATION	2,800	1,000	
1600	ELECTRICAL	2,300	2,100	
1700	CONCRETE 20 CY	680	2,250	
1800	STRUCTURAL STEEL	180	240	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION	2,250	4,500	
2300	PAINTING & PROTECTIVE COATINGS	130	520	
2400	FIELD TESTING	30	270	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	19,770	16,730	— • —
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
3900	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 08 AREA → 9 10: 06 DATE CC75-80:

SEQUENTIAL PIECE# → CC11-16: V110 | ITEM DESCRIPTION 17-22: 0801## | 23-45: LIQUID AMMONIA STG. TANK | 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT	A*	13,000 GAL GATX	LB	20000	9700		-0-	600
DESIGN OF PSIG	AA	175°F 350 PSIG						
SHELL: DIAMETER	AC	10' ∅						
LENGTH T TO T	AD	22' T-T						
THICKNESS	AE							
HEADS: NO., TYPE	AF	2 ELLIP.						
THICKNESS	AG							
PL. SPEC.	AH							
MOUNTING	AI	HORIZ.						
SUPPORTS	AJ	SADDLES						
WEIGHT	B*		LB					
DWG. NO.	CA							
INQ. NO.	CB							
VENDOR	CC							
FREIGHT	D*	F/A	CWT					
INTERNALS	E*	TUBE BUNDLE	CF		300			150
INTERNALS	F*	10# 3/4" ∅ CS	CF					
INTERNALS	G*		LB					
INTERNALS	H*		LB					
SUB TOTAL - 0801	99							
SLABS-PEDESTALS	1705A*		CY	17	580		-0-	1850
SADDLES	1715A*		CY					
SUPPT. SUPERSTRUCTURES	1801A*		LB					
PLATFORMS/LADDERS	1803A*		LB					
FIREPROOFING: TYPE. THK	1901A*		SF					
INSULATION: TYPE THK	2201A*	YES	SF	1050	1250			2500
COVER	2201AA							
PAINTING: STRUCT. STL.	2301A*		TON					
PAINTING: VESSEL	2301B*	NONE	SF		-0-		-0-	-0-
TOTAL					11830		-0-	5100

CODE: 0800 DESIGNATION: VESSELS, TANKS & DRUMS SHEET 1 OF 1

0800 GROUP VI

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41740   CODE → 7 8: 1 3   AREA → 9 10: 06   DATE CC75-80

SEQUENTIAL PIECE # → CC11-16 | ITEM DESCRIPTION: 17-22: 1 3 0 1 # # | 23-45 | 46-74

FIXED → → →	17-22		LINE DESCRIPTION: WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL		A *		TON	1.5 TN	800			
ALLOY		B *		TON					
OTHER MATLS.		C *		TON					
		D *		TON					
		E *		TON					
		F *		TON					
		G *		TON					
VALVES: CARBON STL.	1302	A *		NO		500			
ALLOY		B *		NO					
OTHER MATLS.		C *		NO					
		D *		NO					
		E *		NO					
		F *		NO					
		G *		NO					
FLGS, FTGS: CARBON STEEL	1303	A *		UNR		100			
ALLOY		B *		UNR					
OTHER MATLS.		C *		UNR					
		D *		UNR					
		E *		UNR					
		F *		UNR					
		G *		UNR					
SPECIALTIES-TRAPS, ETC.		H *		UNR					
SPRING HANGERS		I *		UNR					
EXPANSION JOINTS		J *		NO					
SHOP FAB'N. - VDR. CARB. STL	1304	A *		TON					
ALLOY		B *		TON					
ERECT. UNDERGROUND PIPE	1305	A *		TON					
M H TON		B *							
ERECT. RACK PIPE: CARB. STL	1306	A *		TON					
M.H TON		B *		MH					
ERECT. RACK PIPE: ALLOY		C *		TON					
M.H. TON		D *		MH					
TOTAL									

CODE: 1300   DESIGNATION: PIPING   SHEET   OF

1300 GROUP VI

ESTIMATE DETAIL SHEET

DATE: CC75-80

ESTIMATE/JOB NO. (CC2-6) → 41940   CODE (7 8) → 13   AREA (9 10) → 06

SEQUENTIAL PIECE# → CC11-16 | 17-22: 1307## | ITEM DESCRIPTION 23-45 | 46-74

LINE DESCRIPTION FIXED →	17-22			WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 35-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
ERECT. ALL OTHER: CARB. STL		A	*	460-MH	TON	1.5-TN				5100
MH/TON		B	*		MH					
ERECT ALL OTHER: ALLOY		C	*		TON					
MH/TON		D	*		MH					
FLD. SHOP FAB: CARB. STL		E	*		TON					
MH/TON		F	*		MH					
FLD SHOP FAB: ALLOY		G	*		TON					
MH/TON		H	*		MH					
TESTING WELDERS	1305	A	*		SPL					
PIPING SKETCHES	1309	A	*		EA					
TEMP. PIPING	1310	A	*		SDL					
PIPE CASTINGS	1339	A	*		LF					
EXCAV. FOR UGRD. PIPING	1340	A	*		CY					
COAT & WRAP UNDGRD. PIPING	1341	A	*		LF					
SUB TOTAL - 1300		9	9							
CONC. P.S. 100% FLD. FAB.	1713	A	*		CY					
INC. FDN.										
PIPE WAY TRENCHES	1719	A	*		CY					
PRECAST P.S. - FAB'N. ONLY	1731	A	*		CY					
PRECAST P.S. - ERECT. ONLY	1732	A	*		NO					
PIPE SUPPT. RIGRID HGRS.	1805	A	*		LB					
MINOR P.S. - PREFAB	1905	B	*	200#/TON	LB	300#	180		—.—	240
SMALL SHAPES - FLD. FAB.	1905	C	*		LB					
PIPE RACKS - PREFAB	1807	A	*		LB					
FIREPROOF. STR. STL. P.S.	1901	A	*		CF					
PIPING INSULATION	2201	A	*		LF		1000		—.—	2000
PAINTING STR. STL. SUPPTS.	2301	A	*		TON					
PAINTING PIPE	2301	B	*		TON	1.5	30			120
TESTING	2401	A	*		SPL		30			270
TOTAL							2640		—.—	7730

CODE: 1300   DESIGNATION: PIPING   SHEET   OF

1300 GROUP VI

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 15 AREA (9 10) → 06 DATE CC75-80

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		1501##	EPA INSTRUMENTATION	

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS	A*		LF					
BD-MTD. INSTR. - ACCESS	B*		NO					
ANALYSIS INSTR. FLD. MTD.	1503A*		NO		800			
FLOW INSTR. FLD. MTD.	B*		NO					
LEVEL INSTR. FLD. MTD.	C*		NO					
PRESSURE INSTR. FLD. MTD.	D*		NO		600			
TEMP. INSTR. FLD. MTD.	E*		NO		600			
WEIGH INSTR. FLD. MTD.	F*		NO					
COMBUSTION CONTROL - PKGD.	G*		NO					
CONTROL VALVES	1511A*		NO					
SLIDE CHOPPER PLUS VA	B*		NO		300			
VALVE POSITIONERS	C*		NO					
BUTTERFLY VALVES	D*		NO				—0—	1000
RELIEF VALVES	E*		NO					
I.A. FILTERS, REGS. ACCESS.	1516A*		UNR		100			
I.A. TUBING & FITTINGS	B*		UNR					
I.A. SUPPLY	C*		UNR					
I.A. CHANNEL & SUPPTS.	D*		UNR					
INSTR. PROCESS PIPING	1518A*		UNR		400			
INSTR. HOUSINGS	B*		UNR					
INSTALL, CALIBRATE, ST-UP	1520A*		SMC					
INSTRUMENTATION SUBCT	1550A*		UNR					
SUB TOTAL - 1500	99							
FTGS. & PIERS	1710A*		CY	NEGL.	—0—		—0—	—0—
CURBS & LEV. RAIL PANEL	1710B*		CY					
PIPING INSUL. WINTERIZE	2201A*		LF	NEGL.	—0—		—0—	—0—
PAINTING - EQUIP.	2301A*		TON					
PAINTING - PIPE	2301B*		TON	NEGL.	—0—		—0—	—0—
TOTAL					2800		—0—	1000

CODE: 500 DESIGNATION: INSTRUMENTATION

SHEET 1 OF 1

1500 GROUP VI

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 4 1 9 4 0 CODE → 7 8: 1 6 AREA → 9 10: 0 6 DATE CC75-80

ITEM DESCRIPTION

SEQUENTIAL PIECE# → CC11-16 | 17-22: 1 6 0 1 # # | 23-45 | 46-74

FIXED → → →	17-22		LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS		A *		HP		—.—			—.—
POWER WIRING	1602	A *		UNR		—.—			—.—
LIGHTING SYSTEM		B *		UNR		1,800			1,200
GROUNDING SYSTEM		C *		UNR		300			400
TELEPHONE & COMMUN. SYS		D *		UNR		—.—			—.—
ELECTRIC TRACING		E *		UNR		—.—			—.—
SUBSTATIONS	1605	A *		KVA		—.—			—.—
		B *		KVA					
		C *		KVA					
INSTRUMENT WIRING	1607	A *		UNR		200			500
GENL. ELECTRICAL MATL.	1609	A *		UNR					
ELEC. SUBCONTRACTS	1609	A *		UNR					
		B *		UNR					
TEMP. P & L MATLS. CCCD.	1610	A *		UNR					
POWER BILLS		B *		UNR					
TEMP. P & L SUBCONT.		C *		UNR					
SUB TOTAL - 1600		99							
MISC. ELECT. SUPPT. FTGS.	1710	A *		CY		100			400
DUCT ENCASEMENTS	1720	A *		CY					
ELECT. MANHOLES	1729	A *		CY					
STRUCT. STL. FOR SUPPTS.	1801	A *		LB					
PAINTING - STRUCT. STL.	2301	A *		TON					
PAINTING - EQUIP.	2301	B *		TON		100			400
PAINTING - CONDUIT	2301	C *		TON					
TOTAL						2500		—.—	2900

CODE: [illegible] DESIGNATION: ELECTRICAL SHEET OF

1600 GROUP VI

021-271

GROUP VII – Waste Disposal

SUB-SUMMARY

CUSTOMER: ENVIRONMENTAL PROTECTION AGENCY — ESTIMATE NO. 4940 (TASK NO. 11)

LOCATION: DURHAM, NORTH CAROLINA — DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS (2)	6,150	680	
0900	PUMPS AND DRIVERS (7)	31,840	7,020	
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE			
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL – MAJOR EQUIPMENT	37,990	7,700	–0–
1300	PIPING	251,700	232,000	
1400	SEWERS			
1500	INSTRUMENTATION	5,300	2,000	
1600	ELECTRICAL	66,400	109,300	
1700	CONCRETE 193 CY	5,690	24,030	
1800	STRUCTURAL STEEL 34 TON	38,700	45,900	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT	–0–	–0–	3,694,000
2200	INSULATION	–0–	–0–	–0–
2300	PAINTING & PROTECTIVE COATINGS	5,090	20,340	
2400	FIELD TESTING	1,400	12,600	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	412,270	453,870	3,694,000
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
T300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 08 AREA → 9 10: 07 DATE CC75-80

SEQUENTIAL PIECE# → CC11-16: V106

ITEM DESCRIPTION: 17-22: 0801 # # 23-45: PROCESS WATER [illegible] TNK 46-74

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 66-74
WEIGHT	A *	2000 GAL. GATX	LB	2400				
DESIGN OF PSIG	A A	AMB ATMOS.			3300			380
SHELL: DIAMETER	A C	7' Ø						
LENGTH T TO T	A D	7' HI						
THICKNESS	A E							
HEADS: NO., TYP.	A F	OPEN TOP						
THICKNESS	A G	FLAT BOTTOM						
PL. SPEC.	A H	CS W/ EPOXY COAT						
MOUNTING	A I	VERT.						
SUPPORTS	A J							
WEIGHT	B *		LB					
DWG. NO.	C A							
INQ. NO.	C B							
VENDOR	C C							
FREIGHT	D *		CWT					
INTERNALS	E *		CF					
INTERNALS	F *		CF					
INTERNALS	G *		LB					
INTERNALS	H *		LB					
SUB TOTAL - 0801	9 9							
SLABS-PEDESTALS	1705 A *		CY	5	170		—•—	540
SADDLES	1715 A *		CY					
SUPPT. SUPERSTRUCTURES	1801 A *		LB					
PLATFORMS/LADDERS	1803 A *		LB					
FIREPROOFING: TYPE, THK	1901 A *		SF					
INSULATION: TYPE THK	2201 A *	NONE	SF		—•—		—•—	—•—
COVER	2201 A A							
PAINTING: STRUCT. STL.	2301 A *		TON					
PAINTING: VESSEL	2301 B *		SF	200	10		—•—	40
	2301	COAL TAR EPOXY	SF	200	100		—•—	400
TOTAL								

CODE: 0800 DESIGNATION: VESSELS, TANKS & DRUMS SHEET 1 OF 2

0800 GROUP VII

ESTIMATE DETAIL SHEET

CC1	ESTIMATE/JOB NO. (CC2-6)	CODE (7-8)	AREA (9-10)	DATE (CC75-80)
	41940	08	07	

SEQUENTIAL PIECE# (CC11-16)	ITEM DESCRIPTION 17-22	ITEM DESCRIPTION 23-45
V109	0801 # #	SLURRY OVERFLOW SURGE

FIXED	LINE DESCRIPTION 17-22		WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
WEIGHT		A *	1200 GAL. GATX	LB	1800				
DESIGN OF PSIG		A A	127°F, ATM.			2850			300
SHELL: DIAMETEN		A C	6'⌀						
LENGTH T TO T		A D	6' HI						
THICKNESS		A E							
HEADS: NO., TYPE		A F	OPEN TOP						
THICKNESS		A G	FLAT BOTTOM						
PL. SPEC.		A H							
MOUNTING		A I	VERT.						
SUPPORTS		A J							
WEIGHT		B *		LB					
DWG. NO.		C A							
INQ. NO.		C B							
VENDOR		C C							
FREIGHT		D *		CWT					
INTERNALS		E *		CF					
INTERNALS		F *		CF					
INTERNALS		G *		LB					
INTERNALS		H *		LB					
SUB TOTAL - 0801		9 9							
SLABS-PEDESTALS	1705	A *		CY	4	140		—•—	430
SADDLES	1715	A *		CY					
SUPPT. SUPERSTRUCTURES	1801	A *		LB					
PLATFORMS/LADDERS	1803	A *		LB					
FIREPROOFING: TYPE, THK	1901	A *		SF					
INSULATION: TYPE THK	2201	A *	NONE	SF		—•—		—•—	—•—
COVER	2201	A A							
PAINTING: STRUCT. STL.	2301	A *		TON					
PAINTING: VESSEL	2301	B *		SF	150	10		—•—	40
	2301		COAL TAR EPOXY	SF	150	50		—•—	320
TOTAL						6660		—•—	2450

CODE: 0800 DESIGNATION: VESSELS, TANKS & DRUMS SHEET 2 OF 2

0800 GROUP VIII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 09 (7 8) AREA → 07 (9 10)

DATE (CC75-80)

ITEM DESCRIPTION

	11-16	17-22		
PIECE	P104AC		SLURRY OVERFLOW TRANSF.	

Line description	Code		Write in	Fixed type	Quantity	Material	S	Subcontract	Labor
			6x6x17 ASH		3 REQ				
		A	3 @ 2050#		6150#	5200		— - —	2500
		B							
		A C	636 GPM						
HEAD - FT		A D	100' TDH						
			RUBBER INTERNALS						
MOTOR HORSEPOWER		B *	40 HP						
TURBINE		C *							
		D *							
		E *							
FREIGHT		F *	F/A						
		G *							
VENDOR SERVICE		H *							
		J *							
		K *							
FOUNDATION	1 7 0 6	A *		CY	5.5	170		— - —	810
CONCRETE DEMOLITION	1 7 3 5	A *							
		B *							
STRUCTURAL STEEL	1 8 0 1	A *							
STL PLATFMS - LADDERS	1 8 0 3	A *							
		B *							
INSULATION	2 2 0 1	A *							
PAINT	2 3 0 1	A *				30		— - —	120
	2 7	A *							

1 4

0900 GROUP VII

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 09 (7 8) AREA → 07 (9 10) DATE (CC75-80)

ITEM DESCRIPTION: STANDARD PIECE # — P/06AB (CC11-16) | 0931 ## (17-22) | PROCESS WATER PUMPS (2) (23-45) | 46-74

FIXED	17-22	LINE DESCRIPTION (WRITE IN 23-32)	FIXED TYPE UNIT	QUANTITY 33-45	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP	A *	8x23 DBL. SUC9						
NO. OF PIECES	A A	I-R						
HORSEPOWER	A B	EST. WT 2 @ 4500 #	#	2 REG 9000	16400			2500
GPM	A C	1600 GPM						
HEAD - FT.	A G	400' TDH						
		CI, W/BRONZE INT						
MOTOR HORSEPOWER	B *	300 HP						
TURBINE HORSEPOWER	C *							
	D *							
	E *							
FREIGHT	F *	F/A						
	G *							
VENDOR SERVICE	H *							
	J *							
	Z							
FOUNDATION	1706 A *		CY	2.5	80-		—0—	370
CONCRETE DEMOLITION	1735 A *							
	B *							
STRUCTURAL STEEL	1801 A *							
STL PLATFMS - LADDERS	1803 A *							
	B *							
INSULATION	2201 A *							
PAINT	2301 *				30-		—-—	120
PILING	2701							

FOUNDATIONS FOR PUMPS AND DRIVERS

SHEET 2

0900 GROUP VII

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 09 AREA → (9 10) 07 DATE (CC75-80)

SEQUENTIAL PIECE # → P109 | 17-22: 0901 # | ITEM DESCRIPTION (23-45): SCRUBBING SYST. SUMP PMP

	17-22	LINE DESCRIPTION — WRITE IN (23-36)	FIXED TYPE UNIT	QUANTITY	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP	A *	2.5 x 1.5 x 10 I-R		1 REQ	540			
NO. OF PIECES	A A	EST. WT		500#				320
HORSEPOWER	A B							
GPM	A C	100 GPM						
HEAD - FT.	A D	50' TDH						
		CI, BRONZE INTER						
MOTOR HORSEPOWER	B *	3 HP						
TURBINE HORSEPOWER	C *							
	D *							
	E *							
FREIGHT	F *	F/A						
	G *							
VENDOR SERVICE	H *							
	J *							
	K *							
FOUNDATION	1708 A *		CY	1	30		—o—	150
CONCRETE DEMOLITION	1735 A *							
	B *							
STRUCTURAL STEEL	1801 A *							
STL PLATFMS - LADDERS	1803 A *							
	B *							
INSULATION	2201 A *							
PAINT	2301 A *				10		—•—	40
PILING	2701 A *							

3 4

0900 GROUP VII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 09 (7 8) AREA → 07 (9 10) DATE

ITEM DESCRIPTION

SEQUENTIAL PIECE#	17-22	23-45	46-74
P-111		EMERG. PROCESS WATER PMP	

	17-22	LINE DESCRIPTION (WRITE IN) 23-28	FIXED TYPE UNIT	QUANTITY	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP	A*	8×23 DBL. SUCT		1 REQ				
NO. OF PIECES		I-R EST. WT		7000 #	9700			1700
HORSEPOWER	AD							
GPM	AC	3000 GPM						
HEAD - FT	AG	400' TDH						
		CI, BRONZE INTRL						
MOTOR HORSEPOWER	B*	400 HP						
TURBINE HORSEPOWER	C*							
	D*							
	E*							
FREIGHT	F*							
	G*							
VENDOR SERVICE	H*							
	J*							
	K*							
FOUNDATION	1706 A*		CY	3.7	120		— • —	550
CONCRETE DEMOLITION	[illegible] B*							
	B*							
STRUCTURAL STEEL	1801 A*							
STL PLATFMS - LADDERS	[illegible] A*							
	B*							
INSULATION	2201 A*							
PAINT	2301 A*				20		— • —	60
PILING	[illegible] A*							
					32330		— • —	9210

SHEET 4 OF 4

· 0900 · GROUP VIII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 13 AREA → 9 10: 07 DATE CC75-80

SEQUENTIAL PIECE # → CC11-16

ITEM DESCRIPTION: 17-22: 1301 # # 23-45; 46-74

FIXED → → →	17-22		LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL		A *		TON	168 TN	43,000			
ALLOY		B *		TON					
OTHER MATLS.		C *	NEOPRENE LINED	TON	108	182,000			
		D *		TON					
		E *		TON					
		F *		TON					
		G *		TON					
VALVES: CARBON STL.	1302	A *		NO		4,700			
ALLOY		B *		NO					
OTHER MATLS.		C *		NO		3,000			
		D *		NO					
		E *		NO					
		F *		NO					
		G *		NO					
FLGS, FTGS: CARBON STEEL	1303	A *		UNR		7,800			
ALLOY		B *		UNR					
OTHER MATLS.		C *		UNR		11,200			
		D *		UNR					
		E *		UNR					
		F *		UNR					
		G *		UNR					
SPECIALTIES-TRAPS, ETC.		H *		UNR					
SPRING HANGERS		I *		UNR					
EXPANSION JOINTS		J *		NO					
SHOP FAB'N. - VDR. CARB. STL	1304	A *		TON					
ALLOY		B *		TON					
ERECT. UNDERGROUND PIPE	1305	A *		TON					
M H TON		B *							
ERECT. RACK PIPE: CARB. STL	1306	A *		TON					
M H TON		B *		MH					
ERECT. RACK PIPE: ALLOY		C *		TON					
M.H. TON		D *		MH					
TOTAL									

CODE: 1300 DESIGNATION: PIPING SHEET OF

1300 GROUP VII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940   CODE → 7 8: 13   AREA → 9 10: 07   DATE [illegible]

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	45-74
		1307##		

FIXED	LINE DESCRIPTION 17-22		WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 48	SUBCONTRACT 54-60	L?BOR [illegible]
ERECT. ALL OTHER: CARB. STL	A	*	13,300-MH	TON	168 TN	—·—		—·—	146,000
MH/TON	B	*		MH					
ERECT ALL OTHER: ~~ALLOY~~	C	*	7,800-MH	TON	108 TN	—·—		—·—	86,000
MH TON	D	*		MH					
FLD. SHOP FAB: CARB. STL	E	*		TON					
MH/TON	F	*		MH					
FLD SHOP FAB: ALLOY	G	*		TON					
MH TON	H	*		MH					
TESTING WELDERS	1308 A	*		?PL					
PIPING SKETCHES	1309 A	*		EA					
TEMP. PIPING	1310 A	*		?DL					
PIPE CASTINGS	1339 A	*		LF					
EXCAV. FOR U.G. PIPING	1340 A	*		CY					
COAT & WRAP UNDGRD. PIPING	1341 A	*		LF					
SUB TOTAL - 1300	99								
CONC. P.S. 100% FLD. FAB.	1713 A	*		CY					
INC. FDN.									
PIPE WAY TRENCHES	1718 A	*		CY					
PRECAST P.S. - FAB'N. ONLY	1731 A	*		CY					
PRECAST P.S. - ERECT. ONLY	1732 A	*		NO					
PIPE SUPPT. RIGRID HGRS.	1805 A	*		LB					
[illegible] P.S. - PREFAB	1805 B	*	200#/TON	LB	55000#	33000			44000
SMALL SHAPES - FLD. FAB.	180[illegible] C	*		LB					
PIPE RACKS - PREFAB	1807 A	*		LB					
FIREPROOF. STR. STL. P.S.	190[illegible] A	*		CF					
PIPING INSULATION	2201 A	*		LF					
PAINTING STR. STL. SUPPTS.	230[illegible] A	*		TON					
PAINTING PIPE	2301 B	*		TON	276	4000			16000
TESTING	2401 A	*		?PL		1400			12000
TOTAL						290100			304600

CODE: 1300   DESIGNATION: PIPING   SHEET OF

1300 GROUP II

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940 CODE (7 8) → 15 AREA (9 10) → 07 DATE (CC75-80)

SEQUENTIAL PIECE# (CC11-16) — ITEM DESCRIPTION: 17-22: 1501## ; 23-45: EPA INSTRUMENTATION ; 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS	A*		LF					
BD-MTD. INSTR. - ACCESS	B*		NO		1500			
ANALYSIS INSTR. FLD. MTD.	1503A*		NO					
FLOW INSTR. FLD. MTD.	B*		NO					
LEVEL INSTR. FLD. MTD.	C*		NO		1800			
PRESSURE INSTR. FLD. MTD.	D*		NO		500			
TEMP. INSTR. FLD. MTD.	E*		NO					
WEIGH INSTR. FLD. MTD.	F*		NC					
COMBUSTION CONTROL - PKGD.	G*		NO					
CONTROL VALVES	1511A*		NO		800			
SLICE CHOPPER PLUS VA	B*		NO					
VALVE POSITIONERS	C*		NO				—•—	2000
BUTTERFLY VALVES	D*		NO					
RELIEF VALVES	E*		NO					
I.A. FILTERS, REGS. ACCESS.	1516A*		UNR					
I.A. TUBING & FITTINGS	B*		UNR					
I.A. SUPPLY	C*		UNR					
I.A. CHANNEL & SUPPTS.	D*		UNR		700			
INSTR. PROCESS PIPING	1518A*		UNR					
INSTR. HOUSINGS	B*		UNR					
INSTALL, CALIBRATE, ST-UP	1520A*		SMC					
INSTRUMENTATION SUBCT	1550A*		UNR					
SUB TOTAL - 1500	99							
FTGS. & PIERS	1710A*		CY	NEGL.	—0—		—•—	—0—
CURBS & LEV. RAIL PANEL	1710B*		CY					
PIPING INSUL. WINTERIZE	2201A*		LF	NEGL.	—0—		—•—	—0—
PAINTING - EQUIP.	2301A*		TON					
PAINTING - PIPE	2301B*		TON	NEGL.	—•—		—•—	—0—
TOTAL					5300			2000

CODE: DESIGNATION: INSTRUMENTATION SHEET 1 OF 1

1500 GROUP VII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 16   AREA → (9 10) 07   DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		1 5 0 1 # #		

LINE DESCRIPTION FIXED → → →	17-22		WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS		A *		HP		2000			800
POWER WIRING	1602	A *		UNR		52,000			88500
LIGHTING SYSTEM		B *		UNR		12,000			19,000
GROUNDING SYSTEM		C *		UNR		200			300
TELEPHONE & COMMUN. SYS		D *		UNR		—.—			—.—
ELECTRIC TRACING		E *		UNR		—.—			—.—
SUBSTATIONS	1505	A *		KVA		—.—			—.—
		B *		KVA					
		C *		KVA					
INSTRUMENT WIRING	1607	A *		UNR		200			700
GENL. ELECTRICAL MATL.	1608	A *		UNR					
ELEC. SUBCONTRACTS	1609	A *		UNR					
		B *		UNR					
TEMP. P & L MATLS. COCO.	1610	A *		UNR					
POWER BILLS		B *		UNR					
TEMP. P & L SUBCONT.		C *		UNR					
SUB TOTAL - 1600		9 9							
MISC. ELECT. SUPPT. FTGS.	1710	A *		CY		800			3200
DUCT ENCASEMENTS	1720	A *		CY					
ELECT. MANHOLES	1729	A *		CY					
STRUCT. STL. FOR SUPPTS.	1801	A *		LB					
PAINTING - STRUCT. STL.	2301	A *		TON		}			
PAINTING - EQUIP.	2301	B *		TON		700			2800
PAINTING - CONDUIT	2301	C *		TON		}			
TOTAL						67900			115300

DESIGNATION: ELECTRICAL -   SHEET   OF

1600. GROUP VII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940   CODE → 7 8: 17   AREA → 9 10:   DATE CC75-80:

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		1701##		

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
LG-NON-BM. SLABS (FORMED)			CY					
LG.NON-BM. SLABS (NON FMD)	1702							
LG. BEAMED TYPE SLABS	1703							
LG. COMPR. SLABS & PEDS.	1704							
SLABS & PEDS-VENT VESSELS	1705							
BLDG. FDNS. CONT. WALL-FTGS.	1706							
FLOOR SLABS AT GRADE	1707							
PUMP & MACH. FDNS.	1708							
COOLING TOWER BASINS	1709							
FTGS. & PIERS FOR STR. CLS	1710	PIPE BRIDGE	CY	5	170		—•—	1130
MULTILEVEL SUPERSTRUCTS	1711							
SMALL SUPERSTRUCTURES	1712							
PIPE SUPPTS. INCL. FDNS.	1713	SLEEPERS	CY	110	2750		—•—	8800
HORIZ. HTR. & BOILER FDNS.	1714							
SADDLES FOR HORIZ. TANKS	1715							
SEWER MANHOLES	1716							
SM. SUMPS & CATCH BASINS	1717		CY	3	140		—•—	1200
PIPEWAY TRENCHES	1718		CY	28	1120		—•—	6850
ELEV. PLATFORMS & ROOFS	1719							
ENCASEMENTS	1720							
FIREWALL W/FOOTING	1721							
FIREWALL W/OUT FOOTING	1722							
LARGE CONC. TANKS	1723							
OUTSIDE PAVING	1724							
RETAINING WALLS	1725							
ELECTRICAL MANHOLES	1729							
SIDEWALKS	1730							
PRECAST PIPE SUPPTS.	1731							
ROADWAYS	1733							
DEADMEN	1734							
CONC. DEMOLITION	1735							
CONC. TANK RINGS	1736							
TOTAL					4180			17980

CODE: 1700   DESIGNATION: CONCRETE   SHEET OF

700 GROUP VII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 18   AREA → (9 10) 07   DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45
		1801##	

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
SUPPORT SUPERSTRUCTS	A*		LB					
P & L FOR TWRS. & VESSELS	1803A*		LB					
PIPE SUPPRTS. & RIGID HGRS.	1850A*		LB					
PIPE RACKS	1807A*	LIGHT STL	LB	8000	2550		— s —	1200
STEEL DAVITS	1809A*	GRATING 700#	LB	6500	3150			700
JIB CRANES	B*		LB					
MONORAIL (INCL. STRUCTL)	C*		LB					
ELEVATOR STRUCTURES	D*		LB					
STEEL DEMOLITION	1810A*		LB					
STRUCT. STL. SUBCONT.	1805A*		LB					
SUB TOTAL - 18	99							
TROLLEYS & HOISTS	1201A*		NO					
LG. NON-BM. SLABS (FORMED)	1701A*		CY					
LG.NON-BM. SLABS (N/FORMED)	1702A*		CY					
LG. BEAMED TYPE SLABS	1703A*		CY					
FTG. & PIERS FOR STR. COLS	1710A*		CY					
MULTILEVEL SUPERSTRUCTS.	1711A*		CY					
1-LEVEL SUPERSTRUCTS	1712A*		CY					
FIREPROOF STR. STL.	1901A*		CF					
PAINTING-STR. STL.	2301A*		TON	7 TN	100			400
TOTAL					5800			2300

CODE: 1800   DESIGNATION: STRUCTURAL STEEL   SHEET   OF

1800 · GROUP VII

80

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 41940   CODE (7 8) → 21   AREA (9 10) → 07   DATE (CC75-80)

SEQUENTIAL PIECE # → (CC11-16)

ITEM DESCRIPTION: 17-22: 2101 # #   23-45: SETTLING POND   46-74

FIXED → → →	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
ROUGH GRADING	A *	CLEAR & GRUBBING	SY	300-A	—.—		180,000	—.—
FINISH GRADING	2102 A *	EXCAV & BACKFILL	SY	3,680,000	—.—		2,760,000	—.—
BLACK TOP RDS. & PAVING	2103 A *		SY	-CY				
GRAVEL, SURFACING	2104 A *	CLAY BLANKET	SY	161,000	—.—		386,000	—.—
RAILROADS	2105 A *		LF	-CY				
FENCING	2106 A *	BUTYL LINING	LF		—.—		88,000	—.—
EARTH DIKES	2107 A *		CY					
DIGGING TEST HOLES	2108 A *	GRASS & SEEDING	UNR	242,000	—.—		160,000	—.—
DEEP WELLS	2109 A *		UNR	-SY				
TEMP. RR. ROADS, FENCES	2110 A *	OUTLET STRUCTURE	UNR					
	B *	INCL GATES ETC.	UNR		—.—		50,000	—.—
	C *		UNR					
	D *		UNR					
SITE WORK (DEMOLITION)	2111 A *	FENCE	UNR	14,000'	—.—		70,000	—.—
SITE WORK SUBCONTRACT	2150 A *		UNR					
SUB TOTAL 31	99	ROADS NOT IN SCOPE			—.—		—.—	—.—
CONCRETE VALVE BOXES	1717 A *	RAILROADS NONE	CY		—.—		—.—	—.—
FIREWALL W/FOOTING	1721 A *		CY					
FIREWALL W/O FOOTING	1722 A *		CY					
LARGE WATER SEPARATORS	1723 A *		CY					
OUTSIDE PAVING	1724 A *		CY					
	1724 B *		CY					
RETAINING WALLS	1725 A *		CY					
SIDEWALKS	1730 A *		CY					
TOTAL					—.—		3,694,000	—.—

CODE: 2100   DESIGNATION: SITE DEVELOPMENT   SHEET   OF

2100   GROUP VII

5021-271 → GROUP VIII – ENTRAIN. SEPAR. RECIRC. ←

SUB-SUMMARY

CUSTOMER: ENVIRONMENTAL PROTECTION AGENCY — ESTIMATE NO. 91990 (1/St 1kill)

LOCATION: DURHAM, NORTH CAROLINA — DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS			
0900	PUMPS AND DRIVERS (6)	30,900	7,000	
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE (1)	—·—	—·—	28,500
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PAC[illegible] UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	30,900	7,000	28,500
1300	PIPING	80,200	49,500	
1400	SEWERS			
1500	INSTRUMENTATION	2,900	1,100	
1600	ELECTRICAL	3,200	5,300	
1700	CONCRETE 80 CY	2,660	9,560	
1800	STRUCTURAL STEEL	2,100	2,900	
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION	—·—	—·—	
2300	PAINTING & PROTECTIVE COATINGS	590	2,250	
2400	FIELD TESTING	300	2,700	
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	122,850	80,310	28,500
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
[illegible]00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
1300 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6) CODE → 09 (7 8) AREA → 08 (9 10) DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE #	CC11-16	17-22	23-45	46-74
	P107AC	9 0 1 # #	1 ST STG. ENT. SEP. REC/AC.	

	17-22	LINE DESCRIPTION / WRITE IN	FIXED TYPE UNIT	QUANTITY	MATERIAL	S	SUBCONTRACT	LABOR
TOTAL PUMP	A *	12 x 14 DBL. SUCT		3 REQ				
NO. OF PIECES	A A	I-R			18500		—o—	4200
HORSEPOWER	A B	EST. WT 3 @ 5000		15000#				
GPM	A C	7400 GPM						
HEAD - FT.	A D	130' TDH						
		CI W/BRONZE INTR						
MOTOR HORSEPOWER	B *	300 HP						
TURBINE HORSEPOWER	C *							
	D *							
	E *							
FREIGHT	F *	F/A						-
	G *							
VENDOR SERVICE	H *							
	J *							
	K *							
FOUNDATION	1 7 0 9 A *		CY	11	340		—o—	1600
CONCRETE DEMOLITION	1 7 3 5 A *							
	B *							
STRUCTURAL STEEL	1 8 0 1 A *							
STL PLATFMS - LADDERS	1 8 0 3 A *							
	B *							
INSULATION	2 2 0 1 A *							
PAINT	2 3 0 1 A *				50		—o—	150
PILING	2 7 0 1 A *							

SHEET 1 OF 2

0900 GROUP VIII

88

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → 41940 (CC2-6)   CODE → 019 (7 8)   AREA → 08 (9 10)   DATE (CC75-80)

SEQUENTIAL INDEX (CC11-16)	17-22	ITEM DESCRIPTION 23-45
P/O SAB	0901	2ND STG. ENT. SEP. RECIRC.

FIXED	17-22		LINE DESCRIPTION 23-39	FIXED UNIT	QUANTITY 40-45	MATERIAL	S	SUBCONTRACT	LABOR
		A	12 × 14		2 REQ.	12400		—•—	2800
		AA	I-R						
		AB	EST WT 2 @ 5000		10000 #				
CAP		AC	6600 GPM						
HEAD - FT		AD	130' TDH						
			CI W/BRON. INTERN						
MOTOR HORSEPOWER		B	300 HP						
TURBINE HORSEPOWER		C							
		D							
		E							
			F/A						
VENDOR SCHEDULE									
		J							
		K							
EXCAVATION	1706	A		CY	7	220		—•—	1060
CONCRETE DEMOLITION	1705	A							
		B							
STRUCTURAL STEEL	1801	A							
STL PLATFMS - LADDERS	[illegible]	A							
		B							
INSULATION	2201	A							
PAINT	2301	A				40		—•—	100
PILING	[illegible]	A							
TOTAL						31550		—•—	9910

DESIGNATION: PUMPS AND DRIVERS   2 2

0900 GROUP VIII

18

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940   CODE → (7 8) 25   AREA → (9 10) 08   DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-46
	V107	2501##	ENT. SEP. RECIRCUL. TANK

FIXED → → →	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
CAPACITY	A*	RECO	MG		—o—		28500	—o—
WEIGHT	B*		LB					
DESIGN: OF, PSIG	BA							
SHELL: DIAMETER	BB	25'ø						
LENGTH T TO T	BC	25'HI						
THICKNESS	BD	3/16"						
PL SPEC	BE	CS; INT'R EPOXY			INCL.		ABOVE	
HEADS: NO., TYPE	BF	OPEN TOP; COATED						
THICKNESS	BG	FLAT BOTTOM 1/4"						
		w/ BAFFLE						
SUB TOTAL - 2501	99							
SLABS & PEDESTALS	1705A*		CY	59	2000		—•—	6500
SADDLES FOR HORIZ. TKS.	1715A*		CY					
CONC. TANK RINGS	1736A*		CY					
SUPPT. SUPERSTRUCTURES	1801A*		LB					
PLATFORMS & LADDERS	1803A*		LB					
FIREPROOFING: TYPE, THK	1901A*		SF					
INSULATION: TYPE, THK	2201A*	NONE	SF		—•—		—o—	—•—
COVER	2201AA							
PAINTING-STRUCT. STL.	2301A*		TON					
PAINTING-TANK	2301B*		SF		100		—•—	400
TOTAL					2100		22500	6900

CODE: 2500   DESIGNATION: TANKAGE   SHEET 1 OF 1

2500 GROUP VIII

25

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 4194[illegible] CODE → 7 8: 13 AREA → 9 10: 08 DATE CC75-80

ITEM DESCRIPTION

SEQUENTIAL PIECE # → CC11-16 | 17-22: 1301 # # | 23-45 | 46-74

FIXED → → →	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 48	SUBCONTRACT 54-60	LABOR 68-74
BARE PIPE: CARBON STL	A *		TON	18 TN	4,200			
ALLOY	B *		TON					
OTHER MATLS.	C *		TON					
	D *		TON					
	E *		TON					
	F *		TON					
	G *		TON					
VALVES: CARBON STL.	1302 A *		NO		22,500			
ALLOY	B *		NO					
OTHER MATLS.	C *		NO					
	D *		NO					
	E *		NO					
	F *		NO					
	G *		NO					
FLGS, FTGS: CARBON STEEL	1303 A *		UNR		53,500			
ALLOY	B *		UNR					
OTHER MATLS.	C *		UNR					
	D *		UNR					
	E *		UNR					
	F *		UNR					
	G *		UNR					
SPECIALTIES-TRAPS, ETC.	H *		UNR					
SPRING HANGERS	I *		UNR					
EXPANSION JOINTS	J *		NO					
SHOP FAB'N. - VDR. CARB. STL	1304 A *		TON					
ALLOY	B *		TON					
ERECT. UNDERGROUND PIPE	1305 A *		TON					
M/H TON	B *							
ERECT. RACK PIPE: CARB. STL	1306 A *		TON					
M.H TON	B *		MH					
ERECT. RACK PIPE: ALLOY	C *		TON					
M.H. TON	D *		MH					
TOTAL								

CODE: 1300 DESIGNATION: PIPING SHEET OF

1300 GROUP- VIII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → (CC2-6) 41940 CODE → (7 8) 13 AREA → (9 10) CS DATE (CC75-80)

ITEM DESCRIPTION

SEQUENTIAL PIECE# →	CC11-16	17-22	23-45	46-74
		1307##		

FIXED	LINE DESCRIPTION 17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
ERECT. ALL OTHER: CARB. STL	A*	4500-MH	TON	18 TN	-.-		-.-	4950
MH/TON	B*		MH					
ERECT ALL OTHER: ALLOY	C*		TON					
MH/TON	D*		MH					
FLD. SHOP FAB: CARB. STL	E*		TON					
MH/TON	F*		MH					
FLD SHOP FAB: ALLOY	G*		TON					
MH/TON	H*		MH					
TESTING WELDERS	1308A*		%PL					
PIPING SKETCHES	1309A*		EA					
TEMP. PIPING	1310A*		%DL					
PIPE CASTINGS	1339A*		LF					
EXCAV. FOR UGRD. PIPING	1340A*		CY					
COAT & WRAP UNDGRD. PIPING	1341A*		LF					
SUB TOTAL - 1300	99							
CONC. P.S. 100% FLD. FAB. INC. FDN.	1713A*		CY					
PIPE WAY TRENCHES	1718A*		CY					
PRECAST P.S. - FAB'N. ONLY	1731A*		CY					
PRECAST P.S. - ERECT. ONLY	1732A*		NO					
PIPE SUPPT. RIGRID HGRS.	1805A*		LB	}				
MINOR P.S. - PREFAB	1805B*	200#/TON	LB	3600#	2100			2900
SMALL SHAPES - FLD. FAB.	1805C*		LB	}				
PIPE RACKS - PREFAB	1807A*		LB					
FIREPROOF. STR. STL. P.S.	1901A*		CF					
PIPING INSULATION	2201A*		LF					
PAINTING STR. STL. SUPPTS.	2301A*		TON					
PAINTING PIPE	2301B*		TON	18	300			1200
TESTING	2401A*		%PL		300			2700
TOTAL					22900			5630

CODE: 1300 DESIGNATION: PIPING SHEET OF

1300 GROUP VIII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. → CC2-6: 41940 CODE → 7 8: 15 AREA → 9 10: 08 DATE CC75-80

SEQUENTIAL PIECE# →	CC11-16	ITEM DESCRIPTION 17-22	23-45	46-74
		1501##	EPA INSTRUMENTATION	

LINE DESCRIPTION FIXED → → →	17-22	WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
INSTRUMENT BOARDS	A *		LF					
BD-MTD. INSTR. - ACCESS	B *		NO					
ANALYSIS INSTR. FLD. MTD.	1503 A *		NO		800			
FLOW INSTR. FLD. MTD.	B *		NO					
LEVEL INSTR. FLD. MTD.	C *		NO					
PRESSURE INSTR. FLD. MTD.	D *		NO		900			
TEMP. INSTR. FLD. MTD.	E *		NO		200			
WEIGH INSTR. FLD. MTD.	F *		NO					
COMBUSTION CONTROL - PKGD.	G *		NO					
CONTROL VALVES	1511 A *		NO					
SLIDE CHOPPER PLUS VA	B *		NO		600			
VALVE POSITIONERS	C *		NO					
BUTTERFLY VALVES	D *		NO				—•—	1100
RELIEF VALVES	E *		NO					
I.A. FILTERS, REGS. ACCESS.	1516 A *		UNR					
I.A. TUBING & FITTINGS	B *		UNR					
I.A. SUPPLY	C *		UNR					
I.A. CHANNEL & SUPPTS.	D *		UNR					
INSTR. PROCESS PIPING	1518 A *		UNR		400			
INSTR. HOUSINGS	B *		UNR					
INSTALL, CALIBRATE, ST-UP	1520 A *		SMC					
INSTRUMENTATION SUBCT	1550 A *		UNR					
SUB TOTAL - 1500	99							
FTGS. & PIERS	1710 A *		CY	NEGL.	—•—		—•—	—•—
CURBS & LEV. RAIL PANEL	1710 B *		CY					
PIPING INSUL. WINTERIZE	2201 A *		LF	NEGL.	—•—		—•—	—•—
PAINTING - EQUIP.	2301 A *		TON					
PAINTING - PIPE	2301 B *		TON	NEGL.	—•—		—•—	—•—
TOTAL					2900			1100

CODE: 1500 DESIGNATION: INSTRUMENTATION SHEET OF

1500 GROUP VIII

ESTIMATE DETAIL SHEET

CC1

ESTIMATE/JOB NO. (CC2-6) → 4 1 9 4 0 CODE (7-8) → 1 6 AREA (9-10) → 0 8 DATE (CC75-80)

SEQUENTIAL PIECE# (CC11-16) → ITEM DESCRIPTION 17-22: 1 6 0 1 # #   23-45

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	S 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS	A *		HP					
POWER WIRING	1 6 0 2 A *		UNR		3,000			4,800
LIGHTING SYSTEM	B *		UNR		200			500
GROUNDING SYSTEM	C *		UNR					
TELEPHONE & COMMUN. SYS	D *		UNR					
ELECTRIC TRACING	E *		UNR					
SUBSTATIONS	1 6 0 5 A *		KVA					
	B *		KVA					
	C *		KVA					
INSTRUMENT WIRING	1 6 0 7 A *		UNR					
GENL. ELECTRICAL MATL.	1 6 0 8 A *		UNR					
ELEC. SUBCONTRACTS	1 6 0 9 A *		UNR					
	B *		UNR					
TEMP. P & L MATLS CCCC.	1 6 1 0 A *		UNR					
POWER BILLS	B *		UNR					
TEMP. P & L SUBCONT.	C *		UNR					
SUB TOTAL - 1600	9 9							
MISC. ELECT. SUPPT. FTGS.	1 7 1 0 A *		CY		100			400
DUCT ENCASEMENTS	1 7 2 0 A *		CY					
ELECT. MANHOLES	1 7 2 9 A *		CY					
STRUCT. STL. FOR SUPPTS.	1 8 0 1 A *		LB					
PAINTING - STRUCT. STL.	2 3 0 1 A *		TON	}	100			400
PAINTING - EQUIP.	2 3 0 1 B *		TON	}				
PAINTING - CONDUIT	2 3 0 1 C *		TON	}				
TOTAL					3,400			6,100

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DESIGNATION: ELECTRICAL

SHEET OF

1600 GROUP VI

GROUP [illegible] MAJOR ELEC'L EQUIP.

SUB-SUMMARY

USTOMER ENVIRONMENTAL PROTECTION AGENCY ESTIMATE NO. 41940 (TASK No. 11)

LOCATION DURHAM, NORTH CAROLINA DATE ______

PAGE ______ OF ______

CODE	DESCRIPTION	MATERIAL	LABOR	SUBCONTRACT
0100	FIRED HEATERS AND BOILERS			
0200	STACKS			
0400	REACTORS AND INTERNALS			
0500	TOWERS AND INTERNALS			
0600	HEAT EXCHANGE EQUIPMENT			
0700	COOLING TOWERS			
0800	VESSELS, TANKS, DRUMS & INTERNALS			
0900	PUMPS AND DRIVERS			
1000	BLOWERS AND COMPRESSORS			
1100	ELEVATORS, CONVEYORS, MATERIALS HANDLING EQUIP.			
1200	MISCELLANEOUS MECHANICAL EQUIPMENT			
2500	TANKAGE			
2800	FILTERS, CENTRIFUGES, SEP. EQUIPMENT			
2900	AGITATORS AND MIXERS			
3000	SCRUBBERS & ENTRAINMENT SEPARATORS			
3100	MACHINE TOOLS & MACHINE SHOP EQUIPMENT			
3200	HEATING, VENTILATION, AIR CONDITIONING, DUST CONTROL (Process only)			
3400	PACKAGE UNITS			
	SUB-TOTAL - MAJOR EQUIPMENT	—0—	—0—	—0—
1300	PIPING			
1400	SEWERS			
1500	INSTRUMENTATION			
1600	ELECTRICAL	297,000	15,000	
1700	CONCRETE 130 CY	3,700	13,000	
1800	STRUCTURAL STEEL			
1900	FIREPROOFING			
2000	BUILDINGS			
2100	SITE DEVELOPMENT			
2200	INSULATION			
2300	PAINTING & PROTECTIVE COATINGS	300	1,200	
2400	FIELD TESTING			
2600	CHEMICALS AND CATALYST			
2700	PILING			
3300	FIRE PROTECTION			
3500	MISCELLANEOUS FURNITURE FOR PLANT BUILDINGS			
	SUB-TOTAL	301,000	29,200	—0—
3700	MISCELLANEOUS DIRECT CHARGES			
3800	STOREHOUSE ACCOUNTS			
[illegible]00	CONSTRUCTION SUPPLIES & PETTY TOOLS			
1300	TESTING WELDERS			
00 1600	TEMPORARY PIPING & ELECTRICAL FACILITIES			
2000	TEMPORARY CONSTRUCTION BUILDINGS			
2100	TEMPORARY SITE DEVELOPMENT			
	TOTAL DIRECT COSTS			

CC1

ESTIMATE DETAIL SHEET

ESTIMATE/JOB NO. → 41940 CODE → 16 (7 8) AREA → 09 (9 10) DATE CC75-80

SEQUENTIAL PIECE # — CC11-16 | ITEM DESCRIPTION: 17-22: 1601 # * | 23-45 | 46-74

FIXED	17-22	LINE DESCRIPTION WRITE IN 23-38	FIXED TYPE UNIT	QUANTITY 39-45	MATERIAL 54-60	$ 46	SUBCONTRACT 54-60	LABOR 68-74
MOTOR CONTROLS	A *		HP					
POWER WIRING	1602 A *		UNR					
LIGHTING SYSTEM	B *		UNR					
GROUNDING SYSTEM	C *		UNR					
TELEPHONE & COMMUN. SYS	D *		UNR					
ELECTRIC TRACING	E *		UNR					
SUBSTATIONS	1605 A *		KVA		297,000		--	15,000
	B *		KVA					
	C *		KVA					
INSTRUMENT WIRING	1607 A *		UNR					
GENL. ELECTRICAL MATL.	1608 A *		UNR					
ELEC. SUBCONTRACTS	1609 A *		UNR					
	B *		UNR					
TEMP. P & L MATLS. CCCO.	1610 A *		UNR					
POWER BILLS	B *		UNR					
TEMP. P & L SUBCONT.	C *		UNR					
SUB TOTAL - 1600	9 9							
MISC. ELECT. SUPPT. FTGS.	1710 A *		CY	130-CY	3700		--	13,000
DUCT ENCASEMENTS	1720 A *		CY					
ELECT. MANHOLES	1729 A *		CY					
STRUCT. STL. FOR SUPPTS.	1801 A *		LB					
PAINTING - STRUCT. STL.	2301 A *		TON					
PAINTING - EQUIP.	2301 B *		TON		300		--	1200
PAINTING - CONDUIT	2301 C *		TON					
TOTA[L]					301,000		--	29200

CODE 1600 DESIGNATION: ELECTRICAL SHEET OF

1600 GROUP IX